

THE
MODERN
FARMERS
GUIDE.
IN TWO VOLUMES.

A new SYSTEM of HUSBANDRY, from
long experience in several Kingdoms;
NEVER BEFORE MADE PUBLIC.

With TABLES shewing the expence and profit of each
Crop; how to stock Farms to the best advantage; how
the Crops are to follow each other, by way of rotation;
and how to maintain the poor well, and lower
the poor-cess

LIKEWISE,

Some Hints, humbly offered to the Legislature, on
inclosing COMMONS and OPEN TOWN-FIELDS.

WITH

Several PLANS of new-invented Machines; some valueable
RECEIPTS for the Cure of Cattle, &c. &c.

TO WHICH IS PREFIXED

A short ABSTRACT of the AUTHOR's Life and
Travels.

BY A REAL FARMER.

VOL. II.

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table shewing the rotation of crops, &c.
of a 35 acres farm.

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half-sheet, viz.

1st, The capital or total expence of 150
acres farm, &c.

2d, The total flock and capital required for
a farm of 150 acres, &c.

3d, Different quantities of seed, &c.

4th, Capital and flock necessary for a 35
acres farm.

Plate 1. in pag. 339. Plate 4. in p. 299.



This TABLE shews the Rotation of Crops, and the Expence and

The Year of our Lord	Rotation of Crops which comes round in six Years.							Natural Grafs to accommodate this Farm	One Colt 2 Years old fold each Year	2 Bullocks, 2 Years old fold each Year at 50s. each	One fat Hog fold each year
	A 5 Acres	B 5 Acres	C 5 Acres	D 5 Acres	E 5 Acres	F 5 Acres	G 5 Acres		Colts	Bullocks	Hog
1768	Fallow	Wheat	Barley	Oats	Clover Hay	Clov. Pasture	Pasture		1. 8	1. 5	1. 1
1769	Wheat	Barley	Oats	Clover Hay	Clov. Pasture	Fallow	Pasture		8	5	1
1770	Barley	Oats	Clover Hay	Clov. Pasture	Fallow	Wheat	Pasture		8	5	1
1771	Oats	Clover Hay	Clov. Pasture	Fallow	Wheat	Barley	Pasture		8	5	1
1772	Clover Hay	Clov. Pasture	Fallow	Wheat	Barley	Oats	Pasture		8	5	1
1773	Clov. Pasture	Fallow	Wheat	Barley	Oats	Clover Hay	Pasture		8	5	1
	1. 125	1. 125	1. 125	1. 125	1. 125	1. 125			1. 48	1. 30	1. 6
	Total pro- duce of this Field in six Years	Total Pro- duce of this Field in six Years	Total Pro- duce of this Field in six Years	Total Pro- duce of this Field in six Years	Total Pro- duce of this Field in six Years	Total Pro- duce of this Field in six Years	This Field is charg- ed to the Account of Cattle fold		Total Amount of Horses in six Years	Total Cash by Bullocks in six Years	Total Cash by Hogs in six Years

EXPLANATION

A B C D E F G is each a Field or Division, being in all Seven, and each contains five Acres, which compleats the 35 Acres Farm. Years together in the same Field. You see also which Crop is most proper to follow each other; as for Instance, the Field A in 1768 is Fallow fallowed again; and thus all the Fields take their Turn, no one being sown twice with the same Grain in six Years. At each end of each Column next to Q. is placed 334 l. 10s. which is the Farmer's Profit for six years; consequently he gets the sixth Part of the Profit every year, which is 55 l. 16s. 8d. per Acre; therefore if it should suit (as it may) any other Country, they can easily proportion this to their own Measure; for the Irish Plantation the nearest proportion, the Irish and English Acre differ as Five does from Eight, and 16 Perch over; however it is better for a Farmer to let

Expence and Profit of Thirty-five Acres Farm, from one to six Years.

One fat Hog fold each year	40 Barrels Wheat fold each year at 1l. per Barrel	100 Barrels Barley fold each year at 9s. per Barrel	100 Barrels of Oats fold each Year at 8s. per Barrel	Lambs and Wool each year	Yearly Produce	Rent for 35 Acres at 35 s. per Acre	One Cow to feed each year at 3l.	Repairs of Ploughs, Cars &c. at 5l. each year	Corn for the Family use, and Seed each year at 15l.	Two Hogs to feed yearly	Yearly Expence	Clear Profit Yearly
Hog	Wheat	Barley	Oats	Lambs	l.	Rent l. s.	Cow	Repairs	Corn	Hogs	L. s.	L. s.
1. 1	1. 40	1. 45	1. 40	1. 2	141	61 5	1. 3	1. 5	1. 15	1. 1	85 5	55 15
1	40	45	40	2	141	61 5	3	5	15	1	85 5	55 15
1	40	45	40	2	141	61 5	3	5	15	1	85 5	55 15
1	40	45	40	2	141	61 5	3	5	15	1	85 5	55 15
1	40	45	40	2	141	61 5	3	5	15	1	85 5	55 15
1	40	45	40	2	141	61 5	3	5	15	1	85 5	55 15
1	40	45	40	2	141	61 5	3	5	15	1	85 5	55 15
1. 6	1. 240	1. 270	1. 240	1. 12	1. 846	367 10	1. 18	1. 30	1. 90	1. 6	511 10	334 10
Total Cash by Hogs in six Years	Total Cash by Wheat in six Years	Total Cash by Barley in six Years	Total Cash by Oats in six Years	Total Cash by Lambs, &c. in six Years	Total Cash in six Years	Six years Rent	Expence by Cows for six years	Total Expence in six years	Expence of Corn for Seed and Family	Six years Expence of Hogs	6 Years Expence added up	6 Years clear Profit

ANATION.

Farm. You see in each of those Fields or Columns, the different Crops as they are to follow each other, and no one Crop is to be sown two
 68 is Fallow, in 1769 Wheat, in 1770 Barley, in 1771 Oats, in 1772 Clover Hay, in 1773 Clover Pasture, and in 1774 it comes round to be
 of each Column the Reading explains it. The parallel line from the Fields of Rotation to Q. is a Cash Line all the Way; at the end of which
 ar, which appears in the six Lines above. As this Table is chiefly intended for the Irish Farmers, I have made my Calculation by the Irish
 Plantation Perch is 7 yards, therefore one Acre Irish Measure makes better than one Acre and an half English statute-measure: or, which is
 ner to let Fractions alone, and call two Irish Acres three English.

THE
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FARMERS GUIDE.

CHAP. I.

Some remarks between the old broad-cast Husbandry, and the Author's new mathematical Husbandry, by which corn seeds or plants may be set at a regular given distance with his new invented machine, &c. &c.

BY perusing the following sheets, my reader will see some interesting advantages arise peculiar to this new method of sowing, or transplanting at a regular given distance, or depth, in the ground, each grain or plant in proportion to the richness or quality of the ground.

And as the saving seed and labour (in order to keep down the expence) ought to be the farmer's grand point in view, I

I shall submit to his own impartial judgment the reasonableness of the following argument, which is grounded upon experience.

I always made it my chief study, to ease the farmer from tedious labour, and expensive perplexing methods, as I am sensible there is no merit in writing, or pointing out expensive ones.

A gentleman with the strength of men and money, may almost do any thing; but what I strive for, is to supply the poor man with ingenuity and forecast, in order to be an equivalent for such powerful arguments.

There is not one part in my work that favours of expence above its merit in profit; some places indeed may seem easy and simple, which may perhaps (tho' the more valuable) be the very reason why some flashy prodigal gentlemen may not like it so well, as if more perplexed or expensive.

I lately went, by invitation, to dine with a nobleman, and as I was there by two o'clock, dinner not being ready, among

the rest of his farming curiosities, he shewed me how fine he was making a piece of rough barley land, by breaking the clods with the great ingenuity of ten strong men, at a shilling a-day each; turning to me (for there were several in company) 'Pray Mr. ——— is not that good farming, see how fine that land is,' 'Yes, says a gentleman by-stander, Mr. ———'s books could not make it better;' 'However, says I, I have one satisfaction, if they could not make it better, they would not make it dearer; for if I guess right, it will cost near twenty shillings an acre, and I think I could find a method to do it as well for about one;' 'How is that?' says my lord; 'By a spike, or fluted roller,' says I; 'But I have not one,' says my lord; 'That is no reason, but your lordship might get one, says I, it would save a great deal of expence;' Hang the expence, says he, I do not mind it.'

In short, he went a very round about, expensive way, in every thing he was doing, and I was still preaching up more

saving schemes, but I found it did not suit his cast of mind.

I took notice where the cloders were at two o'clock, and I stepped over the land when they left work at six, and found it came to above a guinea an acre, clodding.

The same night I lay at a farmer's house, who was a sensible, discreet man, and one I had a great regard for.

In the morning, before I went away, he was hurrying all the force he had, to clod barley land; I asked him if he had a roller, yes, says he, but it is too light; well, says I, but we will contrive to make it heavy enough.

The best way in cases of this sort, is to have the frame made so as to carry a box or basket, full of stones to add weight; but all the shift I had, was to tye large stones on the frame, by which means I made it heavy enough for two horses to draw.

I set it to work, and made a harrow follow it, to turn the clods in another direc-

tion, and lighten the land after the roller; so that by each going twice in a place, the land was as fine as heart could wish. I made all the cloders (who were nine) go down another ridge, and found that in the time they were doing one ridge, the roller finished two, and made it finer than the cloders.

Upon which the farmer set all the cloders about other work, and finished his land with the roller; however though this is a good make-shift, a fluted or spiked roller is best; neither is there much necessity for iron pins, wood pins will do the business, provided they be put in with a large augre, and when they break, which is seldom, they are easily repaired.

In short, much may be said for genius and forecast, if we take reason for our guide; it is a common saying amongst farmers, that a good contriver is better than a worker.

As to food necessary for the vegetating of plants, I hope every candid reader will

allow, that every species of ground differs both in quantity, quality, and sort of salts peculiar to each kind of plant to feed upon, according to its nature; which shews the necessity there is to proportion the ground thereto, according to such richness, and which cannot be done to perfection, except by a mathematical rule.

I have often heard unthinking men say, Give the land feed enough, it is rich enough to bear it; which was the only method they could take to destroy their crop; because in such land, there may be substance enough to throw up three times more crop than the surface could bear, as each stalk or ear requires a proper distance to admit the circulation of air around it, which is necessary to keep it in health and vigour, in order to raise a sound, large, healthy grain, and prevent a malady peculiar to a crowded crop, namely, mildew, which is morally impossible to guard against, as long as we follow the present irregular method of

throwing seed into the ground at random; for suppose a man knew both by reason and experience, how many grains of wheat would sow an acre, or any given quantity of land, and be at the pains to count such a number, and take them in his hand and throw thereon, in the most careful manner he could devise; is it possible they would fall at a regular distance from each other? would not some be too near together, and other parts of the land be unseeded?

This is the reason so much seed is thrown away; and it was always looked upon by every writer, as a thing impracticable, to place each grain at a given regular distance from each other, in the diagonal broad-cast method, to come within any reasonable degree of expence, and much more to remove corn plants; but if by the new invented machine, these obstacles are removed, that grain can be sown with a small expence, and with a mathematical certainty.

The next great point for a farmer to

know, is at what distance each plant ought to stand asunder, according to the quality or richness of his soil; and if he have one eye on the experiments hereafter mentioned, and the other on his land, it is almost impossible his crop can miscarry, if he keeps up to the rules laid down; because every grain is placed in one latitude, both as to the perpendicular, and horizontal direction; therefore by the same rule that one will come to perfection, they all must, that escape vermin; and this I have also guarded against, as may appear in its proper place.

The practisers in drill husbandry, will experience the benefit corn receives from a mathematical system, as it is healthy, sound and bold, and also exempted from the casualties that are attendants on the old broad-cast method, namely, blights, mildews, and smallness of the grain, &c. which is mostly occasioned by the over-rankness of the crop, so that it lodges, and what is most distressing, it is generally the best land that meets with such disasters.

Indeed the drill husbandry can only be called half a mathematical system, because by it we only ascertain the distance between the drills, as in the lengthways of the drills corn falls confusedly irregular, and each grain almost at touching, therefore though too much room one way, it is crowded another, so consequently each grain loses half its value; for were it at liberty to spread and feed five or six inches round, it would certainly produce double the quantity of ears and corn.

I have often seen a drill corn-crop lowered in its value, by being sown too thick; therefore it is very clear that sowing corn by a mathematical system in the center of each given distance, must be abundantly more certain of a crop, and the great saving of seed and labour adds still to its value.

But they that follow this new husbandry of sowing or transplanting corn regularly thin with the machine, as directed in the following chapter, must bear

in mind two particulars; first, that his land be well tilled, and kept clear of weeds, or they will destroy his scheme, by preventing his corn stooling or branching.

The next is, the corn must be sown earlier than common, because it has (if transplanted) twice to vegetate; first from the seed, and again after transplanting; for upon a plant's being removed, it dies before it lives again, therefore admits of perhaps near a fortnight's delay.

Likewise when corn is sown thin, so as to admit of stooling (if it be not removed) it may be said to vegetate twice, first from the corn, and again when it is weaned from the kernel; for at this time it has to force from the root new shoots or stooling branches, therefore admits of near a fortnight's delay in its growth, by making the additional shoots, in order to fill the ground designed for that purpose.

As some of my readers may be at a loss to know what I mean by corn being

weaned from the kernel, it may not be amiss to explain it.

Corn in its dry state, before it is committed to the earth, is a dead inactive body, but immediately after it attracts or imbibes the moisture thereof, which ferments, swells, and raises it to life and action, by first forcing out the root from the thickest or eye-end, and the top from the smallest end; if the ground be moist, so as to supply it with sufficient juices, it will break the skin in about five days, and the root will divide itself into many small fibres, which are as so many mouths to feed the blade.

Nature has directed them to search equally round for food, for they spread their branches horizontally inclining downwards; as soon as these are united, or begin to feed upon the earth, then nature arises upwards, and forces out the top in an upright direction (and a single blade) to about three inches high; all this time (which takes up about fourteen

days) it is feeding from the floury or mealy part; but as soon as that is exhausted, the blade (which from the beginning had a joint, though it did not appear) divides into two parts, and falls flat upon the earth, at each side of the root.

At this crisis, the corn is vulgarly called weaned from the kernel; and I make use of the word in several places, in order to be understood; but however, the word is wrong adapted; for the floury or mealy particles are the kernel, and that being grown into root and top, cannot be weaned from itself: in short, it is weaned from nothing it aforesaid had any connection with, but the skin or husk, and this it leaves in a perpendicular direction, resembling a blown egg, which will abide there a long time before it rots or melts away, which (as I before took notice under the article of smutty-wheat) proves very plain how essential a nauseous stinking pickle may be to candy or coat over the skin, in order to prevent grubs, or

worms of any fort, from wounding or preying upon the root, which certainly must weaken the plant, if not kill it outright.

C H A P. II.

The author's new-invented machine, and the number of grains and weight of seed-wheat necessary to sow an English acre; with the transplanting machine, and what number of grains and bushels of seed the said acre will produce, with directions for sowing and transplanting, &c.

I Hinted in the foregoing chapter, that when corn is sown in this thin regular method, it requires an earlier season than when sown thick; because it has a second time to grow or vegetate into fooling-branches; and if the plants be removed, they will be stagnated in the growing part about another week, as every thing of the vegetable creation, upon being taken out of the ground, dies before it lives again.

This makes it necessary to begin earlier by a fortnight or three weeks, to sow your seed-bed than common. The best

season to sow the seed (that you propose to transplant out) is in the last week of August; and that which is sown, as hereafter directed, a single grain to each square foot, in the first week of September. Ground most suitable for this purpose, is a deep rich loam, clay, warp, or hable earth; such must be sown or transplanted at one grain to each foot.

Fallow land is best, though clover, peas or beans, stubble, turnip, fallow, rape-stubble, potatoe-ground, or any land that can be depended upon for a wheat crop, in any other method, will bring a crop with much more certainty in this; except the ground be dirty or given to weeds; in this case, the remedy is to fallow the ground all winter, and have your plants growing in a seed-bed; by this you take the advantage of a proper season to sow your seed, and the plants are growing at the same time you are enriching your land, destroying the weeds, &c.

The plants will be pretty strong by the

first week in February, therefore being placed in the ground immediately after the last plowing, they will be able to spread over, and fill the ground before the weeds can take root, so consequently will suppress and effectually destroy them; but the very first favourable time for removing the plants in February must not be missed.

This method of husbandry is simple and easily learned, all you have to do is, to fix the machine as directed in the cut; and for sowing the seed, fix the pins as they will sink, or make the holes two inches deep; (but the holes that are to receive the plants must be three inches deep) this is all the machine wants to be altered in, between sowing or setting the plants, provided the ground be all of a richness; but as the ground grows worse in quality or richness, the plants will require to stand nearer together, at nine or six inches distance, according to the state or staple of the ground, because the plants will not spread or branch so much in thin gra-

velly, or sandy land, as they will in the above described rich deep loams; neither are the above lands so proper for wheat, they should be suited with such crops as are natural to them, as oats, barley, rye, turnips, clover, or some sort of pulse; but even such weak land will force out branches according to the condition it is in for richness.

Therefore it will answer nearly the same end, and save a good deal of labour, if instead of altering the pegs in the machine, to hole at nine or six inches asunder, you make your holes at twelve inches asunder in all sorts of land, and add so many grains in each hole as your land lowers in value, or state of richness; as for instance, in rich clay, loam, or warp land, put one grain in each hole; in halse-earth or a loamy sand, put two grains in each hole; in a strong shallow gravel, drop three grains in each hole; and in a sand, four grains in a hole.

Seed thus placed will be able to find out all the nourishment within six inches

round; and when sown in the center of a square foot, they have no further to go: and as they stand thus regular, if you see encroaching enemies of weeds, grafs, &c. you may hoe between them. Two men will hoe an acre on a day, for the most delay to all hoers, is in looking out the strongest plants, and the proper distances; but this is all provided against when sown thus regular.

Have regard as much as consists with your situation, to remove your plants from worse to better land, which will encourage their growing or branching much more than to transplant from good to bad land. I need not refine upon this point more than to say, it would as ill agree with their constitution, as that of a high fed person, falling from a full spread table, to feed upon potatoes, and butter-milk: this observation ought to be carried through the whole course of husbandry; that is, always for a farmer to take his cattle and feed from worse land to better.

The best way is for a farmer to divide his work thus, that is, to sow one half of his wheat, and transplant the other; and to raise his plants as follows, viz. sow just double the quantity of seed in each hole as he intends to stay there, and when the ground is ready, pull up half the plants for transplanting, and leave the other half in the ground, by which he will do double the work with the same people, and go on by a regular mathematical rule which cannot err; as his own reason must tell him, that by the same rule that one grain in a field will grow, they all must that are sown; (and if he sow his corn, they will be all alike sown) as they lie in the same situation or latitude, not one being the tenth of an inch deeper in the ground, or covered with more mold; and as they lie in the center of every square foot, if the land in a field be all of one quality or degree of richness, by the same rule that one foot will produce thirty ears from a grain, every one must, or at least they will not vary much.

Another advantage is, that a farmer can manure his ground at a cheap rate, and at the same time be sure that every grain feeds equally upon it, because he drops an equal quantity into each hole along with the feed, as directed under the title of the compound manures.

He also feeds his land and grain, by the thick coat of manure he wraps round his grain by candying it, as directed in the receipt of liquid manure. Thus he sees that every step he takes in this regular method, is valuable and interesting; and a narrow understanding may go through with it, as every thing is so plain and simple.

The machine being fixed, he must have a sober, gentle, tractable horse, and a steady man to guide him straight; and always come back in the track the marker makes going, for the marker is fixed so as to reach half way into the following breadth. Go a-cross the ridges as it works in the nature of a roller; but in fields where ridges lie single, he cannot, there-

fore he must keep length-ways of his ridge, and make the machine as it will agree with the breadth of the ridge, either to take it at two, three, or four times; a little foresight and experience will help him in this.

One man and a horse will hole four or five acres in one day; each child will reach to drop seed or plants into three holes in its breadth, going up and down; and four children at about three pence a day each, will finish an acre; but a man must follow them with a rake to cover the seed; tho' if it be plants he is transplanting, he must have a hoe, and draw the mold a little higher about the roots than in other places, that when the roller goes over it, it may bear harder upon the lumps, so as to settle firm the earth about them, and they must be rolled as soon as transplanted; but what seed is sown thus, must not be rolled till spring, and after hoeing, if you hoe it at all.

When the plants are taken up, a person must go with a three pronged dung-

fork, and run it down to lighten the earth, but not turn it up; and children must be ready to pull up the plants, but the fork need only be used where the land is strong, sad, or stubborn; but land of a lighter, looser staple, is most proper for a seed-bed, and which will save some trouble.

Any sort of grain, grass, or seeds (flax seed excepted) may be sown thus; but small seeds may deceive you as to their vegetating principles, easier than corn.

Therefore it is adviseable to try them; the quickest and surest way to do this, is to lap a few grains up in a woollen cloth, and dip it in water, then put it into a couch of malt in its growing state, and every grain in the cloth will vegetate, if it has not lost its growing quality; and according to the quantity that grows, judge therefrom by dropping more or less into each hole.

One grain in every square foot, if good, is enough of these articles, viz. turnip, rape, cabbage, turnip-cabbage, cole-feed,

burnet, lucern, or clover; but for fear of accidents, you may drop two if good, and three or four, as you see need requires, if bad; it is better to have too many than none, but they are recoverable either way, by planting in mist places, or by thinning, however the latter is the quickest; for being so regularly placed, three weeders will draw up the superfluous plants in a day from an acre.

Turnip-feed sown thus may be easily prevented from being destroyed by the fly, by the following method; it is always in dry weather this misfortune befalls them, therefore in this time the liquid will more effectually take place, and be of essential service, as well for watering the plant, as preventing the fly; the liquid is in the catalogue of receipts for husbandry, but as it is short I shall mention it here also, lest it should slip my reader's notice.

As soon as any appearance of the fly is perceivable, for every acre of turnips, take twenty gallons of water, three pounds

of foot, one pound of brimstone, bruised to powder, one ounce of the spirit of turpentine, one quart of train oil, add a few galls of a bullock, or any other creature; mix all together, and let them lie a night or longer, for they will be better for keeping: then let every one that is employed in weeding or thinning plants, have a cloth rolled up in one hand, to dip every now and then in the liquid, and squeeze a few drops on the plant; while the other hand is employed about the usual office of weeding or thinning; this will cause very little delay, and the expence is about fifteen pence per acre: keep up to these proportions, because too much foot may be dangerous, and overcome the young plant, it being a sharp acid: in short, a crop sown thus regularly, may be trained up almost as a man pleases.

Table on the new method of sowing. 25

A Table shewing the expence and profit of an English acre of wheat, sown or transplanted in the new regular, diagonal method, with the transplanting machine.

To the rent of the land for two years, supposing fallow	-	1	10	0
To ten plowings with one man and two horses, at 2 s. and 6 d. per	- - -	1	5	0
To four children to drop the feed, at 3 d. per	-	0	1	0
To one man to cover it after them	- - -	0	1	0
To holling the land	-	0	0	4
To the compound, about	-	0	1	0
To 43,560 grains of wheat, weight about $4\frac{1}{2}$ pound, and $\frac{1}{2}$ an ounce	- - -	0	0	4
To levelling with the harrow before sowing	- - -	0	0	6
To rolling	- - -	0	0	6
		2	19	8

26 Table on the new method of fowing.

Brought over	2	19	8
To harvesting - - -	9	10	0
To tithe - - -	0	5	0
Total expence	3	14	8
Produce, 42 bushels of seed, at			
5 s. each - - -	10	10	0
Clear profit	6	16	4
Straw pays for threshing.			

C H A P. III.

Experiments made in 1764 by the author to find out the true distances or quantity of land that wheat ought to have to grow upon.

IN 1764, I finished making my machine that harrows, sows and rolls at one time; and as it will sow any quantity of grain on an acre the broad-cast way, I was resolved to make a tryal in the method of sowing wheat thin on the ground, it being always my opinion that a great deal of seed was lost or thrown away by the old method.

However I was in some degree disappointed in the season, because it was the first week in february before I finished my machine, therefore out of wheat-feed-time; but being full of the thing, I was resolved tho' late it was, to try with a little.

And to make my experiment good, I fixed upon the middle of a ten Irish acre field, which had three different sorts of

land in the length of the ridge, which was thirty perch long, at 7 yards to the perch; one end of the field laid low, the soil was a strong, loamy clay; the middle was a high hill, the soil at top was a kind of a clay gravel, very shallow, and mixed with a middle-sized paving stone.

The other end was not so low as the first, neither was it so strong a clay, but was what we call a loamy sand: upon the whole, it was very good wheat-earth; but the bottom of the field was rather more so; the middle at the height of the hill was more proper for barley than wheat.

This field had been wore by long tillage, and was much inclined to weeds; the last crop which was oats, was only indifferent, and full of weeds, but in order to recover the land, and kill the weeds, it had been fallowed two years, in which time it had got only seven plowings, which if I had the management earlier, as I had not, it should have had at least twice as many; but it only came into my

hands the Michaelmas before; tho' upon the whole it was in good order, and by far a better fallow than the common run: I gave it a thin top-dressing, of wet turf ashes, for I had no other, and harrowed them in with the seed.

I measured two ridges very exactly, and on the fifteenth of February I sowed fourteen ounces on one ridge, which according to the measurement of the ridge, was at the rate of one stone to the Irish acre; on the other ridge I sowed twenty eight ounces, which, according to measurement, was at the rate of two stone to the Irish acre, at seven yards to the perch, fourteen pound to the stone, and sixteen ounces to the pound.

The ground was very wet, and the horses sunk as far as the plow went, however the seed was not trod in, because it was sown between the harrow, and the horses feet; but the harrows could not come over it the second time, without making the ground in mortar, so that it was only harrowed once in a place, therefore I am

clear more than half the seed lay bare, or uncover'd; but as the ground and weather was wet, it soon vegetated, so that (except what fowls got, which I believe was not much) it all grew.

Though the machine sowed the grain pretty even, yet as the land was rough from the plough, it tumbled into holes, and as the earth clogged or stuck to the harrow, it dragged some on heaps; but however, all this afforded me a better opportunity of proving my experiments for a future event, as if each grain had been placed at a regular distance, they would have lain within about six or seven inches of each other; therefore I could not have had an opportunity to know how they would grow at the distance of nine, twelve, eighteen, or twenty inches; but as they fell by chance, and irregular, it afforded me matter for speculation in this case; and as the seed was not covered with a rack, or hoed, or nursed, in any degree, it made me thorough master of the subject; and a fairer tryal never could be made, for I sowed the

rest of the field with barley, and clover, and I sowed this wheat also with clover at the same time, namely, about the tenth of May, and rolled it a-cross, along with the rest of the field, gathered the stones, and carried them off in a tumbrel or box, fixed (as I always do) upon the frame of the roller.

About ten days after the seed was sown, it began to shew itself above the ground; from this to the time it had done stooling or branching, I seldom missed a day without a visit to it, so that I closely observed all its stages, situations, or motions.

I measured and noted every distance I could distinguish any alteration in the plant, and found that, in general, where a plant had the most room, it made the most shoots from the root, particularly in the good ground, till it came to the distance of about eighteen inches, that is, about nine inches each way; if they stood thinner than this, it made no great difference, because the blade not being above

nine inches long, they did not meet with their neighbour to obstruct each other in spreading.

For the nature of a plant of wheat is such, that it grows perpendicular till it is weaned from the kernel, that is, till the flour of the corn have all grown into top and root; for it divides each way and leaves the chaff or husk in the middle, standing perpendicular at the surface of the earth, resembling a blown egg shell; therefore as soon as all the inside or flour is exhausted, that the blade or top has nothing to depend upon for nourishment but the earth, the two blades open and fall flat on the ground at the two opposite sides of the root, then as fast as the root gathers strength, it throws or forces out more plants round it, till it forms a figure like a star, or an open full blown mary-gold; and thus the blades keep growing, and creeping along the earth, till they meet with some living obstruction, as grass, weeds, or corn; immediately then they raise up the points of their

grassy blades, and give over fooling; and what is very extraordinary, though there should be more room at one side of the root than the other, yet they all bear as it were harmony, and concur with each other, as if they were sensible of an affront put upon them by an encroaching enemy; therefore, I say, when one is obstructed they generally all give over fooling, and rise to a perpendicular direction.

In rich, clean, good, well-tilled land, a plant of wheat may stool to fill eighteen inches square; yet I chose to fix my standard to one foot square in good land, as that will bring forth to maturity, from twenty to thirty ears, which I found to be as many as had sufficient room to grow out of one root; I say, one foot square will bring thirty ears to full maturity from one root; but were these thirty ears to have thirty roots, in the same space of land, they certainly would fall down, and what we call root welt; but if they stood, the ears and grain in them would be

small and good for little; this I have accounted for in another place.

As I observed, the blades of a good fooling-plant fall, spread, and creep along the ground; but if it be any ways crouded when young, it throws up a perpendicular leader or straw, from the middle of the root, and though it be thinned afterwards, yet it never changes the first bad set it gets; but this perpendicular leader takes up all the crown, and substance of the root: it is true, upon being thinned, it will throw out more shoots round about, but they will be small, and good for little; and a fooling root of wheat is not good, except the ears be near equal of a size; though I had some ears that were only about three inches long, yet most of the good fooling roots had not an ear but what was from five to six inches long, for they were nearly all of one size.

I cut some of the leaders off from these plants that were likely to be bad foolers, and I found that this was the remedy to make them fool well: therefore it is a

good thing to turn sheep in for that purpose, after weeding or thinning, which would make them stool amain. But the best method that could be taken with a crop of wheat sown in the old or new method, would be to hoe it.

I had some roots that produced upwards of fifteen hundred fold, having from twenty to thirty ears at a root; but this was all in the good land, at the lowest end of the field, which was most given to clay; the wheat at the other end, that was inclined to a sandy loam, stooled full as well, but the corn in the ears was not so plump or large, neither were the ears so long or well set, but floamy; and the chafes stood thin and wide, so consequently could not produce in the same length so many grains.

As to the middle of the land, which was a high gravelly hill, and a shallow soil, it was hard to find above fifteen stalks or ears from one root; however the ears, though not quite so long, yet they produced as much real substance as the best,

for they were thick and well set, with a large bold grain.

This was all from the ridge that was sown the thinnest, at the rate of one stone to the acre.

As to the ridge which was sown at the rate of two stone to the acre, it was impossible to find a root with above seventeen ears at it, in the best part of the land, and so in proportion in other parts; this was the most convincing thing of all to the reapers and by-standers, who were all helping to seek, and they found more on the thin sown ridge at thirty ears and upwards to one root, than on the other ridge at seventeen ears to a root.

This gave me so great an insight, that, I think, I would not have missed sowing the ridges with two different quantities of seed as above, for fifty pounds; for it did not only convince me, but it convinced those by-standers, who were the most averse to thin sowing, and who used frequently to cast up to me in their old cant-word, that if I did not sow, I could not reap.

My field lay along by a high road-side, and was the subject of many a taunting joke to the travellers, which I have often heard when I was at the inside of the hedge, unknown to them; particularly one day, two farmers were going by, and one said to the other, 'See paddy, where the Englishman is seeking for a plant of wheat;' (for I was counting how many stalks grew out from one root) 'Yes, says the other, but he will not find many without his spectacles;' answered the other, 'If they have no better crops in England than that will be, they must be obliged to have relief from poor old Ireland, as well for bread as beef, or they could not be able to beat the French.'

Indeed my wheat at that time cut a poor figure to a traveller, for the land was a little rough, and the plants were flat on the ground, so that a person on the road could not see any appearance of corn-carse, till about the middle of April; then it began to cock up its head, and by the fifteenth of May, it had covered the

ground, and was a full flourishing crop; then people wondered where it came from; some would have it, that I had sowed the land over again; others reported that I filled the ground by taking it out of another field, and transplanting it there; thus various reports were spread: however, at harvest when they saw the many ears from one root, and the length of the ears &c. they were obliged to let their false reports vanish; but their malice did not end here, for a few days before it was reaped, some one went up and down each ridge, and cut off a great many of the largest ears; this vexed me greatly, however after all, I had fifty three stone five pounds of the finest wheat I ever in my life saw; every sheaf yielded a stone or upwards, but the sheaves were made large; the produce was at the rate of about twelve barrels to an Irish acre, which is near equal to thirty two bushels to an English one. I picked as many stalks which had the ears cut off, as made two large sheaves; this was in order to give as near a guess

to the crop as possible, but doubtless a great many escaped me, and perhaps some were broke off from the root in cutting, these I could see nothing of.

The crop was late before it was ready to reap, it was the latter end of October; it happened to be a fine dry time, or it is a doubt to me, if it had been wet, if it would have ripened well at all; for it was sown too late, and was still put back by having to branch out.

I must not forget to observe, that I did not pickle, wet, or lime my seed at all; for it, was the first time I had tryed my machine, therefore was afraid that if I wet the corn, so small a quantity would not run and spread so even out of the hopper, as the orifices were obliged to be so very small to discharge it.

I must also tell my reader, that the seed was of different sorts, such as red lammas, white lammas, the long-eared wheat, and two or three sorts of bearded-wheat. I found a great deal of difference in the produce, both in the size of the ears and

stooling part; the red lammas was the best, the long-eared wheat the next. I expected the white lammas to be the best, but it was not: the greatest produce in number of ears, was the long-bearded wheat, and I could like it as well as any of them to sow thin. There was another sort of bearded wheat, that both the beard, ear, and straw, were shorter than any of the rest, but produced a great many little ears; I did not like this at all, it was the worst of them all, and there were more sorts than I can mention.

I sowed the rest of the field with barley, with different quantities on an acre; on one side of the wheat I sowed an acre with sixteen stone, the old accustomed quantity; it was not worth reaping, for it was all lodged, and grown green through before harvest, except a-top of the gravelly hill, and this was small like hen-corn.

I sowed an acre on the other side of the wheat, with three stone, which was a very good crop, for it branched to fill the ground with a fine long-eared corn;

it branched from two to six or eight ears out of a root, according to the distance the grains fell from each other, just so they stood or branched till they filled the ground. I produced some roots to the right honourable and honourable the Dublin Society, with fifteen ears at them, and wheat with from twenty to thirty ears at each root.

The remainder of the field I sowed with eight stone of barley to an acre, which was an excellent crop. I forgot to observe that I found a root of bere among the wheat, that had fifty three ears at it, and some of the ears had above an hundred grains in them; this grain in general, is a very great planter or brancher; but the grain is much smaller than barley, and longer; in fact, it is not a comely grain at all.

I mention these facts just as they happened. I often hear of people producing out of gardens, roots of wheat, &c. with sixty or eighty ears at them; but these can be no experiments for improvement, an

experiment can never be rightly tried out of its own sphere or latitude, in which it is wont to grow, or must be cultivated in: it cannot be expected that a farmer can turn his fields into gardens, and cultivate every plant as he would one, in a garden that is nursed.

Every thing loses its value by being too expensive and troublesome; however it was not the case with this experiment, for it had not even equal justice done it. But it convinced me of the quantity of seed that ought to be sown on an acre, and at what distances each plant ought to stand. The next thing I had to find out, was an easy method of doing this, and also some method to prevent vermin from taking the seed, in order to remove that old saying of a farmer, that he must sow some for worms, and some for fowls. I refer him to the compound to prevent this malady.

C H A P. IV.

*On the culture and perfection of Turnip-Cabbage,
and other cabbages as food for cattle.*

THE turnip-cabbage is a species of cabbage, but differs greatly from it both in shape and taste. I do not think it very agreeable to be ate with meat as greens, particularly to an English palate, who has such variety of garden stuff; however, it has one perfection peculiar to no other vegetable I ever saw, and that is for bearing a great deal of hardship; for I ate some at a gentleman's table last May, that had been lying in the garden-walk all winter, which though not very palatable, yet was not disagreeable; it was much better than I had tasted any when used at any other season green from the root, it reduced to a fine soft pulp by boiling, and quite clear of strings, or what is called in turnips when they grow old, (woody); this shews that it improves by

keeping, and this too without care, in a hardy manner, which makes it the most valuable plant I know, for winter or spring feeding for cattle or sheep. I say, in this it must be superior to all others yet found out, in two or three cases.

First, because it will last good till March, April, and May, when all other vegetables are scarce; and at a time too when ewes, and cows (particularly) are wanting such juicy food to create milk.

Secondly, the tops can be eaten in December, and the bottoms may be laid in a dry meadow till spring, where perhaps they may be as well or better, than if taking up house-room; and the land where they grew can be winter fallowed, and got in good condition for a spring-crop.

Thirdly, they have a firmer texture than turnips, and lie longer in the cattles bellies, therefore must be a stronger food to work upon for bullocks in the plow or the like.

These are all considerations which plead

greatly in their favour, and ought to make them greatly regarded by every farmer, so as to induce him to cultivate some, at least, to supply the place of such vegetables as will not last good till spring. It is a perennial, and a species of both the turnip and cabbage; its leaves are large and spreading, and greatly like those of the winter-cabbage; the turnip part grows above ground, of an oblong shape, much like a Norfolk turnip that does not turn well; its colour is much like that of a cabbage-stalk, a paleish green. It may be cultivated on good land to weigh fifteen or sixteen pounds; it seems to flourish much in a black, light, rich, boggy earth; for I planted a quantity in reduced bog, where there were turf-graft five feet deep under it, and I had a fine promising crop; but my cattle broke in, and ate them all except a very few, of which one came to be above fifteen pounds weight; but the best crop I ever saw cultivated in the field for the food of cattle, was by Mr. Baker, who acts under the patronage of the Du-

blin Society: indeed I believe he is the first that introduced them as a field husbandry crop, and he makes some very sensible remarks thereon. He hints that they would be very valuable as a vegetable, for sailors in long sea-voyages, and in all likelihood, would prevent the scurvy: and, to appearance, I am pretty clear he is right; for since I have taken notice of this plant, I always find it better for keeping. It is not long since I boiled one that was eighteen months old, and it was as good as those I ate at a certain gentleman's house in May last.

The world is greatly obliged to Mr. Baker for his useful hints. I have the pleasure of being slightly acquainted with him, and think the world cannot value him enough for his candor, ingenuity, and indefatigable industry in trying experiments on agriculture.

Mr. Baker sowed his turnip-cabbage in drills, which crop produced about twenty six tuns on an acre; but I am of opinion, that if they were transplanted in the

diagonal form, with the transplanting machine, one upon every square foot, an acre would produce above sixty tuns weight at a very moderate computation; but then the land must be well tilled, and if it be plowed and harrowed immediately before the plants are set, there is no doubt but they will effectually keep down the weeds, if they stand one upon every square foot as above.

It may seem strange to my reader at first sight, when I tell him that a wheat plant ought to have as much room as a cabbage plant on the ground; but in all appearance, it must hold good, because upon inspection, it will be found that a root of wheat will spread farther than that of cabbage.

The turnip-cabbage is managed in every degree as any other cabbage. The seed must be sown the first of March, on a seed-bed, finely prepared. It is too much trouble and expence, to prick the plants out for a large plantation, and they will do full as well by sowing them thin on

the seed-bed; and if you find they grow in lumps, then thin them by weeding, and prick out the superfluous plants.

The middle of June is the best time to transplant them out, however it is better to alter a week either way, to set them in, or before a shower of rain, if possible, rather than in a dry time.

Put them as deep in the ground as the leaves will admit, and close the ground well about them.

If you set them in the diagonal form, you may draw a little earth about the stems with a hand hoe about the beginning of August.

All sorts of cabbages that are intended as food for cattle, are managed the same way: the winter favoy, or the Scotch cale, are very good winter feeding for cattle, and so is the long-sided, or winter-cabbage these are the best of the cabbage kind.

You may begin to feed upon the cabbage, or the tops of the turnip-cabbage, about the first of December; indeed you may use the out-side leaves of the cab-

bage a month sooner, if you be in want of fodder; but keep the body of the turnip-cabbage till late in spring, as it will be a dainty morsel when most other grass-herbage is out of season, which adds much to its value.

Vol. II.

G

C H A P. V.

On Pickles for Wheat.

THERE are a great many receipts, and various methods taken to preserve wheat from smutting, and to add to the fertility of its growth.

The most common method is, to steep it in pickle, (made with bay-salt and water strong enough to bear an egg) for twelve hours, then lime it till it be dry enough to part freely.

Others add to this pickle, for every fifty gallons, three pounds of copperas; this is dangerous, as it is too severe an acid, it may destroy the growing quality.

A Pickle to prevent Smut, &c.

I referred my reader from the chapter of smutty wheat, to this article of pickles for to prevent that malady; and I assure

him that if he stick closely to the rule of this pickle, it will not fail him; he need not be afraid of using smutty wheat for seed, provided he steep it in said pickle duly prepared.

The intent of pickles is to prevent smut, and vermin from destroying the seed, and add to its fertility; in this valuable liquid we gain all these points.

Take a hoghead, and let it into the ground, with its top even with the surface, and have a moveable cover thereon.

In this keep chamber-lye, from one seed time to another, the older the better; and add to it all the galls you can get, either of fowl or cattle. Likewise, to every ten gallons of liquor, put two ounces of the balsam of sulphur, and six ounces of the oil of turpentine, mix them well together, and throw in some heads of garlick bruised.

In this steep your wheat twelve hours, draw off the liquor, and return it to the hoghead, for it becomes much more valuable by age.

Lime the corn till it is brought to a proper consistence for sowing; when thus done, sow it.

I might add several other receipts, but it is needless, as none can be better, cheaper, or easier got than this.

N. B. If you add a little foot, and about a quart of train oil to a hoghead of liquor, it will still add to its fertilizing quality, and the foot and train oil will make it of a more glutinous substance, therefore consequently more of it will stick to the skin of the grain, and the thicker the coat, and the greater its virtue, both in smell to prevent vermin, and strength as manure. Stir it well up before you use it, and take care you do not let it lie in the pickle above twelve hours at most,

*A liquor to steep wheat-seed in when it is sown,
as directed in chap. II.*

As so small a quantity as about four pounds of seed is sufficient for an acre, it

can be managed as this receipt directs, for a small expence; but this could not be expected where a farmer will sow ten or twelve stone of seed perhaps on an acre, it would both be too expensive and troublesome to manage so large a quantity thus.

Take five gallons of liquor out of the hoghead, as is mentioned in the foregoing receipt of pickle for wheat, add to this two quarts of train oil, half a pint of the spirits of turpentine, three ounces of the balsam of sulphur, bruise and squeeze into the liquor, ten or a dozen heads of garlick; add as much foot as you see will make it of a thickish, ropy substance, in order that as much as possible of the liquor may be left sticking about the corn, that it may gather a thick coat of powder, which coat is intended not only to prevent vermin from eating it, but to assist as a manure to nourish the plant; let the corn lie in the liquor six or eight hours.

A compound of manure.

Take three pecks of wood ashes, (to choose; but if they cannot be got, use any other common ashes, so they be dry;) and one peck of powder-lime, and about one quart of foot; mix this all well together, then take one pound of rosin, and one pound of sulphur bruised very fine, mix these well with them; so done, spread the compound on a table, a little at a time, and then take the wheat out of the liquor by handfuls, and roll it among the powder till you find it dry, and each grain part freely; then have a sponge, and sprinkle more liquor over it, and again roll it in the powder till it is dry; so go on till you make each grain the size of a horse-bean, the larger the better, both as a prevention from vermin, and a manure, and for the conveniency of dropping it in the holes; for the larger each lump, the more correct children can be in dropping them singly into the ground.

Thus turnip-feed, or any other feed, or corn whatever, may be treated with success. The above quantity will be sufficient for to candy and steep corn for twenty acres sowing, in this new method; and a much smaller quantity will do for turnip-feed.

*To preserve the young turnip plants from the
fly.*

To twenty gallons of spring-water, add three pounds of foot, one pound of brimstone, (bruised to powder) one quart of train oil, one ounce of the spirit of turpentine, and a few bullock or hogs galls; mix these altogether, and let them lie two or three days (if you can) before they are wanted.

This is for turnips set in the regular broad-cast method.

The people that weed, or thin them, must have in one hand either a piece of sponge, or a cloth, and every now and then, dip it into the liquor, and squeeze a

few drops on every plant, while the other hand is employed in weeding; this will water an acre. It is not expensive or tedious, three children will do an acre a day.

C H A P. VI.

A Receipt to kill red Worms, so destructive to green Corn.

TO one acre take five barrels of foot, mix with it three pounds of copperas well pounded, sow or spread it on the land when the corn is about being weaned from the kernel.

If foot is not to be had, take the bulk of two or three wheat sheaves of wormwood; dry it in an oven, or otherwise, so that it will bruise to powder, with this mix three bushels of common salt, four bushels of quick or powder lime, and three pounds of copperas bruised to fine powder, mix these all together, then sprinkle among them three ounces of the balsam of sulphur, then again mix all well together, and let them lie in a heap nine or ten days, to incorporate or ferment.

Sow it on the land in a calm morning, as you would corn, and the dust will cling

to the blades of the corn, and trickle or run down to the root thereof, so consequently must make the stem nauseous to their taste, and though it may not immediately kill them, yet it will answer the end proposed, as it will prevent them from doing damage.

It is a farce to say, that salt will damage green corn, as I heard objected; I have tried it several times to the amount of six bushels to an acre, and I never found the least ill consequences attending it; but it must not be laid on unreasonably thick; always observe the directions given, or there is no answering for the event. This is also a good manure, as well as for the above purpose.

C H A P. VII.

How to set Potatoes in drills with the plow.

TAKE any poor worn out stubble land, which may be intended for fallow; plow it in autumn, in two furrow ridges, that is, lay two furrows back to back, thro' the piece you intend for potatoes.

By doing this, it will lie dry all winter, and in the beginning of March (or sooner, if the weather permit) harrow it across, and it will fill all the furrows level; after which plow it, either across, or length ways, no matter which, provided the land be all cut and turned up, then again harrow it well and fine; and just before you intend to plant potatoes, plow it again into two furrow-ridges, lying back to back, so that they must close at the top, but not so as to let any mould fall into the opposite furrow.

Being thus laid in ridges, and the furrows all open, in every furrow set a row

of potatoes, each about the length of a man's foot afunder, then take the dunging-baskets, and drop a piece of dung, about the size of your fist upon each potatoe; by this method a little dung will go a great way, and a few hands will set a great deal in a day.

When thus set and dunged, go with the plough, and split the ridge in two, so that what was the furrow, will now be the ridge, and the ridge will be over the potatoes; so that they will come up in rows through the middle thereof.

In summer you may go with the plow up and down every drill to cut the weeds, and earth up the potatoes.

By this method, it may be well termed a potatoe fallow, as it may be plowed always when the weeds grow.

In taking them up, go with a plow and turn the whole drill over, by which all, or most of the potatoes will appear above ground, and be easy gathered; but if a small part of them remain ungathered, they will all be found by harrowing, or the next plowing.

This is a very expeditious way, both in setting, and taking up, and it ought to be every man's study to work his land with as little expence as possible.

The next easy way, to set potatoes with the plow, is in grafs-land, viz.

Harrow the sod well, both length and cross-ways, to scratch, wound and mangle the grafs roots, in order to set them a rotting, which they will speedily when turned up.

Then begin and plow a furrow eight inches broad; in this set a row of potatoes, a foot length asunder, and on every potatoe drop a lump of dung, about the bigness of a man's fist; then plow two furrows, and in the third set another row, so that there will be a furrow between every two rows or drills through the piece. When it is all set, harrow it well, but take care not to turn up or disorder the fods.

When the potatoes are come up a little above ground, go with a plow up and down every drill, and lay the loose mould

which the harrow raised, to the stem of the potatoes; but be careful not to disturb the sod. When they are taking up, turn the drill or furrow with the plow, by which means they are easily gathered.

The third method of planting potatoes, is with spades, as they do in Cheshire.

They dig all the ground, and bury the dung about four inches deep, as if they were trenching in a garden; after which they go with setting-sticks, make a hole, and drop the potatoe in; then they rake the ground to fill the holes.

They are dug up with spades also; but this is expensive, in comparison of setting with the plow.

However they take care not to bury the dung too deep, as also not to throw up any bad earth to spoil the land, which is too often the case in Ireland.

C H A P. VIII.

Remarks on setting Potatoes with the Plow.

METHINKS I see my brother farmer, turn hither in great hurry, to see my reason for advising him to set his potatoes with the plow, and not to keep him long in suspense, I plainly tell him, that it saves both men, money, and dung, besides improving his land: these are considerations well worth his attention.

First, it saves men; as one man, and two horses, and five or six boys, will set as many potatoes in a day with the plow, as seventy or eighty men could set with spades.

Secondly, it saves dung; as one load will go as far as four.

Thirdly, none of the dung is lost, by being buried in the trenches; which is evidently the case when trenched in the old Irish method; but here all the dung takes place immediately, as a lump is dropped upon every potatoe.

Fourthly, potatoes got thus are nearly clear gains, as they may be sown upon land that is intended for summer fallow, and such land will absolutely receive more benefit from this potatoe fallow, than if nothing had grown; for what with hoeing with the plow, and the tops smothering the weeds, &c. the ground is made clean and mellow, and in fine order for a wheat crop at Michaelmas.

And there can be no disappointment, as potatoes can be plowed up in a speedy manner.

All these reasons, I hope, will prevail upon the Irish farmers, or people in general, to follow this cheap and easy method; as nothing concerns a farmer so much as working his land with the greatest dispatch, and the least expence that reason can devise.

As I have travelled between England and Ireland, for near twenty years past, I have had an opportunity to remark how the different markets ruled in the two kingdoms, and I always found that in the city of York, Lincoln, and in large

towns, such as Leeds, Wakefield, Doncaster, Sheffield, and in short all over England, where it is customary to set the potatoes with the plow, that they always sell lower than in Ireland.

This fact is incontestable, although it is well known that in these places, land is higher, and so is labour of more value.

This shews they must have a cheaper and easier way of coming at them, or they could not be afforded at a lower rate: further, the method of setting with the plow is so easy, that a man may teach in an hour, as many people as could look at him.

*The expence and profit of an acre of Potatoes,
raised by the Plow, as directed under that
article.*

To 20 quarters of potatoes, at l. s. d.			
9 shillings per, or 40 stone	9	0	0
To three plowings, at 2 s. 6 s.			
each, if with one man and			
two horses	0	7	6
To two harrowings	0	2	0
To one quarter of potatoes for			
feed, at 9 s. per	0	9	0
To 6 loads of dung, at 2 s. per	0	12	0
To six boys or girls, each at 4 d.			
per day	0	2	0
To two men to see they be right-			
ly set, and to help to lay the			
dung	0	1	8
To three times hoeing with the			
plow	0	6	0
To plowing up	0	2	6
	2	2	8

Table on Potatoes.

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Brought over	2	2	8
To 8 boys or girls at 4 d. each	0	2	8
To carriage home	0	2	0
To land rent	0	15	0
Total expence	3	0	2
Clear profit	5	17	9

C H A P. IX.

*Remarks and illustrations on the foregoing Table
on Potatoes, set with the Plow.*

IN order to encourage the farmer to fall into this valuable piece of husbandry, I have allowed him in the foregoing table, to be well paid for all his trouble; and yet he sees the profit amount to upwards of five pounds, seventeen shillings an acre.

Were I to be very minute, the profit would be much more; I have very often known, from fifteen to twenty pounds made on an acre.

If I was to do strict justice to this valuable crop, it should not be charged, either with rent, plowing, or dung, as it is past contradiction, that the land after this, would be better for a crop of wheat the succeeding year, than if it had been fallowed in the common-way.

It is also to be observed, that I have charged the potatoes only at nine shil-

lings a quarter, which often sell for much more. These are all plain and impartial reasons, and I hope will encourage the farmer to pursue this valuable method.

There are a great many parts of England that follow this method, therefore such may look over this chapter, and leave it for those that know nothing of it, which are a great many parts both of England, Ireland, Scotland, and Wales; so excuse me if in other cases, I mention sometimes what is known to some farmers, as it may be strange to others.

C H A P. X.

On setting Potatoes as in Ireland on ridges by trenching.

THE Irish method of setting potatoes, is in some cases very useful, and the cheapest of all others, except the plow; and would be much more valuable in all cases, if they were cautious not to make the trenches too deep to bury the dung, and throw up bad earth.

It is a very easy method and quick too, because not above one fourth of the ground is dug, and few farmers have fields or closes, but what have waste corners, where the plow cannot come; as also backs of ditches, &c. which, if he lays on a good coat of manure, he may set potatoes in it, and when they are dug up, it will make good compost for his land.

It is also a good method to break up rough stubborn rooty, or rocky land; because this is a quick method of working

it, and the crop will meliorate it to that degree, that it may be plowed the year following with ease; and as to the executing this method, nothing is more easy learned, viz.

When you have fixed upon a piece of land for this purpose, you must lay out your ridges in breadth according to the depth of your soil, that is, if the soil be shallow, make your ridges about four feet broad, and the trench about two feet and a half wide.

This is in order that you may raise earth enough, to cover the potatoes without entring upon a dead poor soil.

But if your under-stratum be good, you may make the trenches deep and narrow, which will save land.

Sometimes it happens that a rich earth, or even a kind of manure, lies within the reach of this trenching, when this happens, it is a treasure.

Cover your potatoes about four solid inches thick; being thus learned and determined, as to the depth and breadth

of the ridge, you must stretch a line, and cut it out, then spread your manure streight, and even on the ridge, leaving the breadth of the trench without any: after this, lay on your potatoes at about nine inches from each other, then dig the trench, and turn the first sod grafs downwards, close to the edge of the ridge, and what the sod does not meet to cover, finish covering it with the second spit; but leave the shovellings at the bottom of the trench, till the potatoes are ready to peep above the ground, then shovel up the loose, and cover all the ridge thinly over; this will check the growth of the top, and cause the potatoes to spread under ground; this is a better way than to finish the ridge all at the first setting, as some will do.

If you have much old grafs, or rushes, &c. on the ground; or that the sod is tough, and likely to take much time to rot; in this case it is better to trench the ground in December or January, and in March set the potatoes; make holes

with the planting machine, but the pegs must be thicker in order to make the holes wide enough to let the set to the bottom; or for want of this machine, you may take a setting-stick, like the shaft of a spade, and fix cross-wise, a strong peg about four inches from the bottom; this is to set your foot on, in order to sink the setting-stick more easily.

Make the holes about nine inches asunder, in them drop the potatoes, but no deeper than just to fall between the two fods, for they love to spread along the firm earth; rake or harrow to fill the holes, then shovel the trenches and finish the ridge.

Tho' rotten dung is doubtless best, yet if the ground be trenched early enough, long dung will make a good shift, and may be better used in this than any other crop, as it will have time to rot, and will keep the two fods open, so that the potatoes may have room to run and spread between them.

In the county of Letrim there is a
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great deal of wet rushy land, worth little, and I have seen very good potatoes in it, by no other manure than to cut the rushes, and lay on the ridge, and make the ridge no broader than the furrow or trench, so that the fods meet; they trench it early; and only make the ridges three feet wide, however if they doubt of the land not to bring a good crop thus, they may be sure of a good crop, if they only give a thin covering of either lime, marl, or limestone gravel along with the rushes, but the sooner this manure is laid on, (in order to grow to the fod and rot) the better, and more certainty of a crop; such land generally gives a good crop of bear or wheat, after the potatoes are dug out.

C H A P. XI.

On different sorts of potatoes.

THERE are various sorts of potatoes, more perhaps than I am acquainted with; however the following is a list of the various sorts which I have cultivated myself.

First, white rusiting; this is a round potatoe, with a rough skin.

Secondly, red rusiting, this is a red round potatoe with a rough skin.

Thirdly, the large Irish white smooth potatoe.

Fourthly, the large round red potatoe.

Fifthly, the cullgee.

Sixthly, the early-wise potatoe.

Seventhly, the white kidney potatoe.

Eighthly, the Jerusalem potatoe.

Ninthly, the bull's eye potatoe.

The bull's eye is a large red potatoe, will grow and yield a plentiful crop on poor ground, but is a very bad eating po-

tatoe, it tastes not much unlike a yam. As they produce a plentiful crop, some gentlemen sow them in Ireland, and particularly near Waterford, in the county of Kilkenny, where they feed and slaughter many swine for exportation.

The Jerusalem potatoe is long and full of eyes, and is of a great produce; each eye makes a set, as indeed so they do in every other potatoe; for the Irish always cut them in sets, which is a good way, though not generally practised in England.

The cullgee is a very sweet eating potatoe, one side is generally red; in their growing, they do not spread and grow from strings like another potatoe, but stick to the bottom of the stalk like a bunch of grapes, and rise to the surface, insomuch that often the red side will be above ground. I had a fine crop of them last year; they are very fond of a well-tilled soil, therefore the drill method of setting them with the plow in broken land, suits them best.

The *wife* potatoe is of an early kind, they produce a small top, but no blossom, and the top withers early; they do not grow very large, are of a light red cast, full of eyes; they are of a great increase, but a great many of them small; they are very useful for an early crop, as they are dry and ready for use two months before others, but is not a good keeping potatoe.

The large red Irish potatoe is of a good kind, and particularly on strong cold land, where it thrives best; it grows large, and produces a good plentiful crop. As the poor Irish eat potatoes instead of bread, they are the best of all others for that use; they will tell you, that they will lie longer than any others on the stomach, so consequently are of a sound, firm texture; their colour is of a deep red, and of a round shape; they have a gross strong stalk or top.

The white ruseting is a very pleasant eating potatoe; but I do not think them good yielders, neither will they thrive well without rich well-tilled land.

The red rusfiting are of a hardy sort, will grow almost on any sort of land, but do not produce many at a root, neither are they large, so consequently are bad yielders, and not a desirable crop, where other feed can be got.

The toad-back is nearly a-kin to the large Irish potatoe, only not so large; the skin is almost black, and rough like a rusfiting: this is a sound, dry, firm, good eating potatoe; it is fond of good fresh land, and agrees very well with the Irish method of setting on lay land, as directed in the chapter that treats thereon.

The kidney (or by some called Spanish potatoe) is of an oblong shape, a white colour, with a yellowish cast; it is a sweet good eating potatoe, but not so dry or mealy, as some others, therefore not so proper to be used in the place of bread, (as is the case in Ireland;) but is very good to be chopped up and used as sauce, or roots to meat; it is an exceeding good yielder, and by nature seeks its food

deep, therefore requires a good covering with mold when set; it will thrive well on a strong deep soil, but requires to be well tilled.

C H A P. XII.

*To improve ground, destroy Whin and Broom,
and at the same time raise a valuable crop
of Potatoes.*

AS much land, as there lies in a manner waste through his majesty's dominions, by being over-run with whins, I have not as yet seen any method found out to eradicate them, but by strength of men and money; however what is to follow may shew the great treasure that may be made of them, by those who, perhaps, formerly thought them a nuisance, and with great expence, have strove to be quit of them.

Some burn the tops on the ground, and stub up the roots by men, at great expence; others (who think themselves perhaps, at the height of improvement in this matter) tear them up with strong plows and horses. But if they considered what vast body of manure they send into

the clouds, and destroy, they certainly would be angry with themselves for so doing.

Particularly, when they once try the valuable method of setting potatoes on them; they will then see that the sap they contain is a very rich manure, which, when smothered, quickly rots; and will enrich the ground past imagination, and at the same time, raise a valuable crop, and this with little expence too.

The second crop (for it will bring two) will not be much inferior to the first, and it may be got with very small trouble, or expence.

After the second crop of potatoes are off, if the ground be strong, it will bring a good crop of wheat, or beans; or if light and sandy, barley or rye.

The first thing that is to be done, is to cut a way through the whins, where the trenches will fall, then stretch a line to the breadth of the ridge you fix upon; if your ground be a deep good foil, the ridge may be broad, and the trench so deep, as

to afford earth enough to cover the whins four inches thick.

The most general breadth of these beds or ridges, is nine feet; and the trench or furrow, two feet; so that two spits deep, and a shoveling, will give the covering required.

Tread down the whins before you lay on the earth, so as to make them fall close one way, if they be not very strong stalks, treading and the earth will keep them down; but if the stalks be too gross, give them a nick close to the root; all the whins you cut up where the furrow falls, you must lay on the ridge, in the most vacant places you can find, as there are few closes so full of whins, but have some bare spots; therefore what is cut from the furrow will make up the deficiency of manure, as they will now act in that station.

But it matters not how strong or rank the whins are on the ground; if they be six feet high in one continued bed, the better, and the more manure it will afford your land.

There is no method yet found out for destroying whins equal to this, as to fallow; they often grow after in spots, but they are effectually smothered when properly done thus.

The longer the ground is trenched before the potatoes are set, the better: that the whins may have time to rot and ferment with the earth, they should be trenched under about Michaelmas, and the potatoes set in April following.

Holes must be made at nine inches asunder with a setting stick, to let the seed down to the whins; in order to make the stick sink the easier, fix a pin across, six inches from the bottom, for to set the foot upon, in the nature of a spade.

And as you make the holes, any children will follow, and drop in the seed.

After they are set, rake the land over to fill the holes.

When the potatoes are just beginning to peep above ground, then shovel the furrows, and throw it over the bed, which will give it a thin covering; all the loose

earth that the spade leaves must be reserved at the bottom of the furrow on purpose for this use.

When you dig out the potatoes, gather them as clean as you can; there will still be sufficient seed left in the ground for a second crop; do not raise any of the whin stalks, but leave them in the ground.

When the potatoes are up, shovel the trenches, and leave the ridge smooth covered up all winter.

If there be not a very hard frost, you will get a second crop without any more expence; but if the frost be so hard, as to rot the sets in the ground, all you have to do, is to set them over again in the the spring; and after they are set, rake and fill the holes as you did the first year.

It is by far the best to take two crops, because the second is got for little, or no expence; and it gives a sufficient time for the whins to rot, and the earth to meliorate.

The stalks and roots of the whins will

be so rotten, as not to resist the plow; therefore you may plow up the second crop of potatoes, and till the ground either for wheat or barley; which cannot fail of a crop after such a rich dressing.

*A table of expence and profit of an acre of whinny
land set with Potatoes.*

To digging 160 perch or fall			
at 2d. per	-	-	1 6 8
To feed and setting	-		0 10 0
To shoveling or finishing	-		0 2 0
Total expence			1 18 8
To one hundred bushels of Po- tatoes at two shillings each			
Total produce			10 0 0
Clear profit			8 1 4

The above is just as it stands with my experiment. I am sensible that if the land be tolerable good and a full crop of whins, an acre will produce double the quantity; but my land was a very bad sand: I have not mentioned any thing for taking up the potatoes, as I made no charge in my experiment, but the second crop pays well for that, as it will have as many potatoes

in bulk, tho' not so large, and there is no expence attending it but the gathering of the two crops.

I am so unfortunate as not to have any whinny land in my possession at present, as all I had is reclaimed; but I assure my reader I will take the first whin farm I can meet with if it suit my situation.

Broom is managed in every degree the same way, and will not fail to enrich the land by its fertilizing quality; but however it is to be observed that it generally grows on lighter land than whins, therefore if the farmer's situation for clay or marl will allow, he must give it a coat of either the one or the other which he is master of, before he trenches the ground, that is, he must cut the broom and lay it on the ridges and then spread the marl upon it, after this trench and cover it with earth as directed for whins.

C H A P. XIII.

The management and use of Fitches.

FITCHES are a very useful good crop, and particularly for winter or spring feeding for sheep, or indeed other cattle; and what adds still to their value, is that they want no dung or manure.

They may be sown and will grow upon land, that would lie in an useless state all winter; and what is more, they add to the fertilizing such land, neither does a farmer pay one penny more rent for this crop, than he would for the stubble standing on the said land.

The chief use of fitches, is to supply the farmer with winter-feeding on his stubble lands, that would otherwise be waste, from the time the crop is reaped, (which is about September) to March or April following: in this case they are very valuable, as what benefits either the land or the farmer gets by them, is clear gain.

But as useful as fitches are in this case, they are too inconsiderable a crop, to stand all summer, and take the year's rent upon them, except in very poor, sandy or gravelly land, which is generally of a low rent.

The better the land they are sown on for the winter-feeding, doubtless the better herbage they will make; also, the sooner they are sown in autumn, (so as to have as much benefit of the declining summer sun as possible) the better, and stronger your herbage will be; therefore the more cattle it will support: and if the land be a rich, deep, strong loam or clay, it will produce good herbage; though it is not proper for seed, because the richness of the soil would force it all into straw, but little corn.

The method of those that would sow fitches, upon their waste stubble-land, for winter-feeding, must be thus.

Take any sort of land, that has been under rape, cole-feed, turnips, or any sort of corn; and as soon as the crop is reap-

ed and off, plow the stubble under; begin in the middle of the ridge, and raise it as high as possible with the plow, (by gathering or taking it up) in order that it may lie as dry as possible all winter, which will add both to the goodness of the crop, and cleanness of the cattles feeding.

This done, sow your fitches at the rate of ten stone to the English acre; then harrow them in; after this, water-furrow, and gripe-crofs your ridges in the lowest places of the land, leading to the side drains, in order to give a ready passage for the winter's water when it falls.

If they be sown at the latter end of August, or the beginning of September, you may turn your sheep in about the middle of December.

Eat them all winter, and in spring the land will be in fine order for oats or barley.

Some chuse to preserve the fitches till spring, to feed early lambs or weathers on, which is very profitable: others will

eat them all the month of May, and then give the land a couple of plowings, and sow it with turnips or rape at midsummer; this is also a good way.

Others again will fallow all summer, after the fitches are eat off, which will greatly enrich the land, and then sow wheat on it in autumn.

If you intend your fitches for feed, sow them in February, at the rate of six stone to the acre, and harvest them as peas. But if they be intended to plow in for dung, (which is the worst way as it is better to make dung by eating them on the ground;) sow them in March, at eight stone to the acre, and plow them in when full of blossom, as directed for buckwheat. See Buck-wheat.

If you intend this crop for fodder, by the way of hay, they must be mown before they are ripe, that is, when the straw is full of juices and sap.

By taking them thus green, when the straw is full of sap or rich substance the grain does not shake out; and the horses

eat straw and corn altogether, which is excellent fodder.

In this case, the hay must be made by the same method as any other hay; only by being cut in this state, the straw will be particularly full of sap; therefore you must be careful that it neither rot or mould.

The quality of fitches is such that they will grow almost on any sort of land; if they stand for seed, poor gravelly, or light sandy land suits them best; for indeed they are mostly sown where nothing else will grow; and I think they exceed any other grass or crop whatever, except turnips for winter-feeding, as they suit our climates, being a native of these kingdoms, and a plant that keeps green all winter; nay, indeed they are of such a juicy herbagy nature, that though the seed ripen, dries and sheds, yet the stalk or straw will be a green herbage and full of juices, after the seed has deserted it.

C H A P. XIV.

*Explanation and nature of different sorts of pulse,
such as fitch, tare, lentils, &c.*

THE following multiplicity of names confusedly made use of by different authors, to convey the meaning of one plant, may well puzzle or confuse the ideas of a farmer, and send him in search after plants, corn, or grain, of which perhaps he himself may be already possessed. Neither is it expected he should have a sufficient library of books always at hand, to clear up references, to which he is too often referred: it is enough to tell him that though the many following names are made use of in different parts of the two kingdoms, yet Fitch is a name that suits our English tongue best, and what may be understood by every one that understands the language: to this name is added vetch, fetch, thetch, thetches, fitches, chick and checkes: and these are abso-

lutely meaning one and the same thing; some make the singular, and others the plural number.

Most people are inclined to believe the real name of this pulse to be vetch; but this cannot be, as vetch is the Latin word for tare: and though the tare is of the pulse kind, yet it hardly bears a resemblance to the fitch in question. Besides, the tare is considered amongst the judicious farmers as a weed; and with great reason too, for it is as destructive to corn as any weed whatever; being a weak, climbing, heavy-topp'd, feathery plant, which pulls the corn down and rots it. The seed also when once it gets a footing, is very hard to get clear of, as it is of a very multiplying nature: it is of a small, round shape, and blackish colour: it is likewise spoke of in scripture as a weed.

Notwithstanding all this, I with regret, see it largely treated of by some authors, as a valuable crop; however, I know the ill consequences of it so well, by woful experience, that I shall not bestow a single

line about it, except to advise the farmer, that already has it, to clear his land of it as fast as possible.

There are two sorts of fitches, namely, the large and small: the large is of a grey colour, and is most proper for to sow when the crop is intended to stand for seed. The small sort is a small black grain, and a hardy plant, and not so gross, therefore not so apt to lodge and rot by the severity of the winter, as the former.

The fitch bears a blue blossom, much like a grey field pea, the pod of much the same likeness, but small; the stalk has a resemblance also, but will not grow to near the length or grossness, and is clad by a small narrow feathered leaf.

The lentil (but corruptly called by some, till) is a species of pulse, and one that deserves the farmer's attention, is nearly of the same nature as the fitch, therefore must have the same management, but will afford to be sown something later in the spring, as it is rather of an earlier kind.

The stalk of the lentil is more taper than that of fitches, so consequently will stand better without a support. For this reason, the farmers may sow it with success amongst their oats, as it is able to support itself without pulling the oats down. Again, it is a great bearer, and adds much to the mealy part of the oat; therefore consequently has more strength of feed for the horse; and the straw being mixed with the oat-straw, makes excellent fodder.

The pod that holds the seed is somewhat like that of a pea, but broader in proportion, and very thin, as the two sides fall close together round the seed.

The seed is grey, and of a round flatish shape; the leaves grow in pairs opposite each other, are long, small, and pointed, of a palish green, and a little downy at the under side.

The corn is very good for pigeons or fowls of any sort: it is also made use of for the same purposes as the grey pea or fitch.

One thing is to be said of the lentil,

that it will grow on any poor, light gravel, or sandy land, perhaps better than any other grain or sort of pulse; but tho' this be its perfection, yet doubtless, the better the land, and flouter the crop, provided it be of a warm sandy nature: indeed any grain of the pulse kind is fond of such land, but when it is richer than common, the seed must be sown thinner in proportion, and particularly when the crop is intended to stand for seed.

C H A P. XV.

On the different management of Clover through all its variations.

CLOVER suits the climate of England and Ireland better than most other grasses, and is a very beneficial crop, either for grazing or meadow; besides, it is a great improver of land, having a strong fibrous root, which quickly incorporates with the earth; and when plowed up or disturbed by tillage, soon rots, and becomes a very rich manure.

This, together with the several rich crops it produces, makes it of more value than any other artificial grass. The way to make the most of it I take to be this, viz.

Sow it with a spring crop, that is, after the corn is sown and harrowed, sow the clover-seed, at the rate of ten pounds to an English acre. When sown, either bush-harrow or roll it; but the latter is the best

When the corn is reaped, eat the clover for about a month; (there are many who object against this method, but my reasons for it, may be seen in the ensuing chapter on clover:) then lay it up; it will be well grown by April, at which time turn in the ewes and lambs.

It is an excellent thing to create milk for feeding lambs with; also good feeding for any sort of cattle, but be watchful to keep your horned cattle walking or stirring about, or they will be very apt to hove and burst, as it is a very swelling food, and particularly if the weather be wet; and when the cattle are first turned in, they eat greedily, not taking time to chew it; therefore it is best, only to suffer them to be in about ten minutes at a time the first day, twenty the next, and so on: but it is best to turn them in with a full belly of hay, or some dry meat, which will abate their greedy appetite, and help to dry up the watery particles.

One great use or advantage in clover,

is its early spring, for it comes in at least a month before natural grass; and a month's grass early in the spring is worth two any other time of the year. This is a consideration a farmer ought to bear in mind, and that for several reasons, viz.

First, for feeding early lambs. Secondly, to supply the place of hay, which at this time of the year is generally scarce, and dear. Thirdly, it is a great strengthener to young cattle, such as calves and foals; for it first purges and then puts them in health and vigour, to enter with a good constitution into the natural grass-pasture: it is always observed, that when they go weak and poor into the summer-grass, best part of the summer is spent, (in which time they should grow in bone) before they recover their flesh. Fourthly, it springs the in-calving cows to milk, and a farmer ought to bear in mind, that a fortnight's good feeding before a cow calves, is worth a month after, as it flushes her to milk, by opening her milk-veins, stretching her udder, tates, and milk-vessels,

strengthens and feeds the calf within, and herself to undergo the painful task of calving. A cow with health and strength, at calving, is worth one and a half that is poor, for milk in summer.

After this most valuable grass has performed all these good offices by its early spring, lay it up for meadow about the first of May, and it will be ready to mow in a month or five weeks after.

By good management, it will produce three crops in one year, beside the after-grass, or winter-herbage, which is almost of as much value as the rest.

The different stages for a crop of clover, is as follows, viz. We suppose the seed to be sown amongst corn in the beginning of April, this year the rent of the land is paid by the corn crop, therefore the clover has no charge of rent upon it till May following, however it is of great use in this year for winter feeding.

After the corn is reaped, the stubbles must be kept free from cattle till the clover get to be a good herbage, which will

be about the first of November; then turn light cattle in: eat it till the first of December, or till you see that they have cropped off all the first shoots.

Then take them out and lay it up till the first of April, at which time it will be a good herbage; therefore if you be scarce of grafs, and your choice to eat it, you may turn in cattle for a month; and the first of May lay it up for a meadow crop: if a wet summer follows, and the ground be good, it will be ready to cut by the tenth of June for hay; the next crop will produce feed, or if you chuse, another crop of hay.

The time to cut the second crop for hay, is about the middle of September, or when the flowers are all full blown, and some of the most forward begin to fade.

But if you would save the seed, give it time enough to ripen, as there is no fear of its shedding, it is so well inclosed with a very sticking, tough, wirey pod; therefore defer cutting till very ripe; as also make it very dry and rash when cut, or

it will not part from the straw or pod, by threshing, without more labour than it is worth.

By taking out the feed, the straw will be threshed very short and mushy, however it will be good fodder, though not near equal to the crop managed for hay in its proper season.

He is a good workman that can thresh out a peck of clean seed in a day; he must first thresh the pods out of the straw, then thresh the pods, and rub and winnow the seed out, then dry the pods or husks again in the sun, and thresh them over again, and so repeat these operations 'till he gets the seed separated from the husk; but the best way is to thresh the pods or husks out of the straw, and then take them to the mill, and shell them, as you would oats; this is very easily done, and saves a great deal of labour, and seed too, as little by this will be wasted.

There is one piece of care, or observation that a farmer should never lose sight of, if he expects a full crop of seed, and

that is, never to lay up his first growth of clover for seed; for though it may grow vigorously, blossom, and look well, to him who is not a true judge, yet it will not bear seed.

Therefore when a farmer eats his clover in April or May, he must see that his cattle eat it near, and crop every branch, as those that miss cropping, though they flower, will not feed; for this reason I recommend eating it in April, mowing the hay crop in June, and saving the seed from the last crop, which will produce the most and best seed.

But if the farmer chuses, he may not eat it in spring, by which he may mow the first crop of hay by the middle of May, and the next crop raise seed from; this will bring the seed crop more in the middle of summer, when the heat is strong, so consequently in less danger of being spoiled by autumn rains which come earlier in Ireland, and the north of England, than they do near London. I mention this, that every farmer may be

a judge of his own situation, and suit his crop accordingly.

It is a gross mistake, and very often committed, to let the first crop of clover-hay stand too long before it is cut, for several reasons: First, when it stands till the bottom of the stalk turns brown, it is drained of all its substance, and also has exhausted or weakened the root too much of its vigour; therefore, when it is mown, the stubble is left as dead or lifeless as that of corn, and the next shoot or branch which comes forth, must be from the very root, which admits of a fortnight's delay in the growth of the crop: whereas, on the other hand, if it was cut when the stalk is green and full of sap or juices, it would send forth fresh shoots out of the very stalk, a little below the cut, and the coat of clover being stripped off, the roots are supplied (before they are left too weak and sickly) with fresh air, and kept in vigour and strength to support, and bring to maturity the succeeding crop.

It is true, there may not be so great a bulk of hay in the first crop, because the stalk is cut when soft and full of juices, therefore flattens, closes, and runs or cakes together when in stack, &c.

It also requires more care in making, but as this happens in the height of summer, there is not so much danger that way, and a stone of such hay is worth two of that which is let to stand till the stalks are left dry, hard and impoverished.

Clover may be sown with success amongst oats; also if wheat or rye be sown in broad ridges, it may be sown amongst them in May, and rolled in.

I have seen good clover where the seed was sown amongst flax; but the best of these crops for raising clover is barley; as this grain is not apt to grow with so long and gross a straw as oats, wheat or rye; therefore the clover is not in equal danger of being smothered.

Yet there is no general rule without

an exception. I have seen good and bad clover among all these crops; a deal depends upon a good season, barley however has the best chance, as we generally till well for it, barley being a tender grain.

C H A P. XVI.

On Cattle bowed by Clover, and its Cure.

THOUGH it may seem strange, or odd in me, to make a comparison between the human and brute creation, yet true it is, that what will effect the cure in one, will add to the other, if due regard be had to proportion the dose agreeable to the strength of the animal.

In many instances similar cases might be quoted to support this assertion; but as few words will answer my present purpose, I shall leave every thing else to the recollection of my reader.

The most natural difference between the intrails of the human and brute species, is, that the former lies in a perpendicular, and the latter in a horizontal direction.

What I aim at by this inference, is, to make my reader feel by himself the disorder that affects a beast by eating over greedily.

I dare say, not one of my readers but, upon recollection, will find that he sometime, or other, has eat his meat hastily, without taking time to chew it till it has given him uneasiness in his bowels by a suppression of wind; insomuch, that he has been obliged to halt, or pause a little till the bit settled; after which he breaks wind with a belch.

This disorder, when coming on, he plainly feels is no other than swallowing too quick.

Therefore, I say, when he finds the gullet over-charged, and the wind so prest, he stops till all is right again; but if he was still to persist in eating, the consequence might be dangerous: and I doubt not but many a one loses their lives by it; as we often hear of people dying at meat.

Just such is the case with cattle eating clover: for the nature of clover is such, that a beast can fill his mouth quicker with it than any other grass; which is owing to its bushy top, and soft frem small stalk,

All natural grass is small at top, and thickest towards the bottom; therefore takes a good pull to break it off, which gives time for a swallow; neither can he fill his mouth so quick; but clover being quite the reverse, he can gather it faster, or quicker than the gullet can discharge it into the maw.

Therefore one mouthful, which is very large, rolled up in balls, overtakes another, till it stops up the passage of the throat, and suppresses the inward air; so put a final stop to respiration; insomuch, that all the inward machinery is like a blown bladder.

All these pressing upon the lungs, hinders them from playing also; which causes a total stagnation of the inward machinery; and if a remedy cannot be procured before the blood abates in its circulation, and cools in the veins, death must unavoidably ensue.

I remember an accident that happened when I was a school-boy, and as I was present, shall repeat it as follows, viz.

A farmer turned a parcel of cattle into a clover field, in the month of May; but in a small time after they were turned in, a bullock was observed to be very sick; he was immediately drove out of the field into the town, which was within two or three hundred yards; but in the town, before he could reach the farmers house, he dropped down dead to all appearance; it was opposite an ale-house.

Immediately people flocked about him; a drunken blacksmith was in the ale-house, with a gun barrel in his hand, and the breach pin out, as he had been cleaning it; he came out running among the rest, and thrust the gun barrel up his fundament; out of which issued a deal of wind.

Another by-stander run his pen-knife into his flank, behind his last rib. I had a pellit gun in my hand, and they put it into the orifice, out there also rushed a deal of wind. They also bled him. This was all performed instantly.

He began to shew signs of life; they

then gave him a glister of warm milk, oil, and brown sugar.

However, in short, with one cookery or another, the bullock recovered; and I believe every thing that was done was new; as most present were strangers to clover.

As it was only then making its entrance into the neighbourhood, therefore they were all strangers to its effects. And tho' they stumbled upon a cure, yet not one of them perhaps could give a rational, coherent answer upon the subject.

The person to whom the bullock belonged, was a very sensible, curious, enterprising man. He was the first that introduced any new thing into the neighbourhood; of which clover was one instance.

As he believed the bullock dead, he stood very coolly looking on, and let them do what they would. After which, he made very sensible remarks.

I have heard him since say, that that was a lucky bullock; as he had been the

means of saving him many cattle.

By the experiment he afforded, the people's attention was so much engrossed with this bullock, that a cow and a two year old heifer were dead in the field before they had presence of mind to attend to them; but the farmer told me he never lost one after. I asked him his cure, he told me that he never wanted one; for he looked upon a prevention preferable to a medicine, or any other operation.

His method was always to keep the cattle stirring when they were first turned into clover; so that three or four mouthfuls was as much as they were admitted to take at once; and then to walk a few yards till that had time to settle into the maw; so as the gullet wind, as he called it, had time to arise. Thus he kept them stirring till they were full. And for a few nights at first, turned them into a common grass pasture.

There is no doubt but this is a very necessary precaution, and if duly attended to, would render every other operation, or

medicine ineffectual. However, left thro' neglect, ignorance or accident, cattle should break into clover, it is absolutely necessary that a cure should be pointed out.

I believe my reader will admit that the nearest step to a cure in any case, is to know the disease, and the cause of it; this will make the cure more certain.

Now we find that the cause of this malady is by suddenly over-filling the neck gut, which swells, and stops all the vent of the throat, or windpipe.

This over-pressure closes the lungs, and hinders them from playing; upon which it puts a final stop to the circulation of the blood through all the veins.

When this loses its motion, it immediately cools, and thickens.

Therefore in this case, every step must be very quick, as delay will put it out of the power of medicine to relieve.

The first thing is to open a vein, the next to make an incision with a knife in the flank, about three inches from the hinder rib, as near the hip bone as can be, not

to enter into the flesh; there is no danger can ensue from this, provided you keep high enough up, not to touch the entrails.

Put a quill in the orifice to keep it open; while this is doing, warm a quart of milk, and put into it half a pound of treacle, an ounce of anniseed, and a table spoonful of sweet oil; mix all together, and give it as a glister, this will nourish the entrails, and keep warm and alive the blood, till a respiration can be recovered.

If a glister of this sort cannot be got, stamp an onion, mix with it butter and pepper, and put it up the fundament, it will cause an attraction, and a heat: pour some sweet oil or quick-silver down the throat, which will help to force a passage for the wind to operate.

C H A P. XVII.

Remarks on Clover.

SOME persons object to the eating of clover, the first winter after it is sown, believing it to weaken the crop, but, on the contrary, I believe it strengthens it; for as clover grows amongst corn, it is drawn up weak and tender, by its warm situation of being furrounded by the crop, and when a tall weak plant of this sort, comes to be suddenly exposed, it is a wonder if the delicacy of its constitution can bear the sudden change without a shock; therefore not fit to encounter with the inclemency of a winter.

I look upon it to be much better to eat off this weak aspiring top, by which means it makes the root strike downwards, grow strong and incorporate with the soil and earth; the top also will send forth fresh shoots, more of them, and of a firmer texture or kind.

To convince myself of this, I once divided a field of clover into two parts, one of which I ate in common with the rest of the stubbles, the other I did not eat at all 'till May.

The part I ate, I found to be a good deal ranker or thicker set on the ground than the other; and I observed that the leaves of the clover that were not eaten, turned yellow with the frost and died away.

In this case, as in most others, reason speaks for itself, that it is better to take off a sickly, tender, weak part or fibre, than to let it die away, and thereby communicate its state of mortification to the main body.

C H A P. XVIII.

*On Lucerne, its perfection and management,
also the method of drilling with the common
Plow, &c.*

LA LUCERNE, so called by the French, but Lucerne by the English; is a very profitable grass, and particularly where the climate is hot, and the land light and sandy, or gravelly and rocky.

It is an excellent food, either as herbage or hay; but its greatest perfection is for soiling of cattle, which makes it of great service in some parts of England, where there are few inclosures, and where grass land is scarce; insomuch that the farmers have no place whereon to turn their cattle, except on bare commons already over-stocked, or tether them on the end of a ridge of corn, in an open corn town-field, such as is described in vol. I.

I say in such places, I know not any grass-crop that would turn out to a great-

er advantage, or be more useful to a farmer; for in such places, let a man's stock of cattle be ever so great, he cannot lay his land down for pasturage let his inclination be ever so much for it: as supposing the town-fields to be four or five hundred acres, he will not yet have above two or three ridges in a place; he is therefore obliged to concur with his neighbours in the point of farming, not having it in his power to lay his land out for grazing; but as there are scarce any persons in the said towns, but what have small fields, or crofts, therefore might sow lucerne on their ridges in the open fields, and keep what number of cattle they please, by soiling them in their croft; and a great advantage they would have in saving the dung too, a very material consideration in these corn countries.

The case in Ireland however, is quite different, as there are few who hold land, but who have it closed to themselves; therefore they seldom want grass in summer, and consequently need not plow up

their lands for that purpose. Moreover the lands of Ireland are naturally given to grafs.

Therefore in this country, I look upon clover to be, by much, the better crop; for though it does not last so long in the ground, yet it lasts long enough to see the natural grafs up; and what is it we sow artificial grafs seeds for, but to supply the defect of this, or rather to keep the land in profit 'till the natural grafs recovers its root, which has been damaged or destroyed by long tillage.

Further, lucerne is not so early a spring as clover; for, if we consider, that it is the sun we may thank for nourishing the earth, and who makes her send forth her early spring; and it is unquestionably the surface that first feels the warmth thereof; therefore, any vegetable that roots shallow, or horizontally, will make the earliest shoot; consequently lucerne must have the more backward spring, as it strikes a great deal deeper than the clover, therefore feeds in a colder climate.

I would further observe, that clover improves land better than lucerne, by its root spreading more largely and plentiful through the sod. I am strongly of opinion, that nothing in nature improves land equal to the root of clover; for if it only lies one year, plow it up, and the furrow or sod will be a perfect matrafs, and after said plowing, the root soon rots, and becomes the finest manure upon earth; but this we cannot say for lucerne, for though what root there is may make good manure, yet it does not spread, or produce half so much root in the sod, because it strikes downwards like a parsnip, therefore a great deal of it lies too deep to be raised by the plow.

The two chief perfections of lucerne are, first in yielding a plentiful produce, though sowed in a sandy, gravelly or rocky ground, provided it be made tolerably rich, and finely tilled: the next is for soiling cattle, which, as I hinted before, is useless in Ireland, or most inclosed countries; as I hardly think any one

would be at the expence of men to cut and carry foil to his cattle, when he has good pasture fields for them to run in and help themselves; besides, cattle never thrive so well when penned up in a small pasture, as when they have room to rake over.

In short, there are so many arguments in support of clover being a better and more suitable crop than lucerne, especially for the lands and climate of Ireland, the north of England, and Scotland; that, on experience, it must always be found to have the preference.

Every farmer, however, is the best judge what sort of land he has, or situation he is in, and accordingly may suit his crop thereto. When a person hears two tales, though he be a stranger to the affair, yet he may give a shrewd guess which is the most reasonable or likely to suit his purpose.

Lucerne requires a deep foil; and tho' the seed must be thinly covered, when sown, yet the land must be prepared by

deep plowing, as the root strikes deep.

It is necessary the land have a good summer-fallow; when the corn is sown and harrowed, sow the lucerne, and harrow once in a place, with the harrow turned the wrong end foremost; and when the corn is come up, roll it.

If the lucerne be intended for summer-pasture or meadow, sow it in the broad-cast way, and in order to sow it even, sow it twice in a place. Take no more in your hand than you can hold between one finger and thumb, and on a ridge that is twelve feet broad, make three casts; this will sow at the rate of four pounds to an English acre, at sixteen ounces to the pound, and five yards and a half to the perch, and so in proportion for the Scotch and Irish acre.

If the lucerne be intended for foiling cattle, it is by much the best to sow it in drills, viz. two drills at eight inches asunder, and then an interval of three feet, and then two drills more, and another interval of three feet; and so on thro' the piece you intend to sow.

It may appear to farmers that are strangers to the drill husbandry, that it is a very nice affair, and not to be done without the expence and nicety of a drill plow; nor did I ever read any instructions that directed it to be done by any other way; but be assured there is nothing more easy, for a common plow will make a very good shift, when managed in the following manner, viz.

The land being well prepared for the seed, if lucerne is to be sown in drills, without a corn crop, begin to plow at one side of the field, and plow a furrow two inches deep, and eight broad, in this scatter the seed; then plow another furrow, in this sow none, but in the next sow another row; this leaves a space of eight inches between the rows; then plow five more, and in the sixth and eight scatter the seed; so go on, leaving five furrows unsown, and two sown; this will leave room enough between the two rows in the wide interval, for the plow to go.

As soon as the lucerne is above ground, go with the plow, and lay a little mould

at the stem of each row; and always when the weeds grow, plow a couple of furrows in the wide interval, which will kill the weeds, and fallow the ground, and give additional vigour to the plants: weed or hand-hoe in the narrow intervals.

If lucerne is to be sown amongst corn, it cannot be set in drills as above with the plow; therefore stretch a line at the same distances of forty eight inches to the wide interval, and eight to the narrow, and shrike the seed along it, and harrow it in, as if it was sown in the broad-cast way; and as soon as the corn is cut, plow the wide intervals, and hand-hoe in the narrow spaces between the two drills.

There can be nothing more easy than drilling and horse-hoeing in the above manner, which may answer the end by sowing any sort of grain, and particularly, wheat, beans, and peas.

Instead of a drill-box, or hopper which is used in plows, take a tin porringer, and punch three or four holes in the bottom,

in the nature of a cullender, just the size of the grain or seed you have to sow; by shaking along the furrow, you may bring yourself to a tolerable degree of exactness, and swiftness too; for one man may sow as fast as a plow will go.

The time to mow lucerne is when just beginning to flower.

Avoid making the hay too green, for it will appear to be dry when it is not, therefore may give again, and damage, it being so full of sap or juices.

When it is cut for foil, there is nothing more than to cut the oldest first. It may begin to be cut when six or eight inches high, and so continue cutting as it is wanted.

C H A P. XIX.

*The most suitable lands and climate for Lucerne,
with Remarks thereon, &c.*

THOUGH the lands of England, Scotland and Ireland are generally pretty good, and naturally given to grass, yet I dare venture to say that more than three fourths of all these kingdoms are not proper for lucerne.

The farmer that proposes to cultivate this plant, must first duly consider its nature; that it is a native of a warm climate, and that it has a long, gross, tap-root, which runs perpendicular; therefore feeds chiefly from the under-stratum, perhaps at two or three feet deep.

Then again, let him turn his eye on his land, and see if it be of a deep, rich soil; if the under-stratum be a loam, or lime-stone gravel, or a deep loamy sand, or a warm rich gravel, or a black hazel earth; if it be any one of these, he may

venture to sow his lucerne thereon, provided he plow deep, and till well.

However, in most parts, I am afraid he will find, instead of the above, a strong clay bottom, at about four or five inches deep, which is of a solid, close, hungry nature, that will not admit the root of a plant to enter; nor has it any nourishment that a plant can feed upon without first being opened by tillage and the air.

And what still adds to the evil, is that it holds water like a dish, will not let it sink through, but keeps it swimming on the top amongst the sod, surface or upperstratum all winter; so that if cattle tread thereon, it immediately works, or poches to mortar.

Then certainly such land cannot be suitable for a plant of such a tender nature, and which seeks its nourishment so deep.

In such land clover has the advantage; as it requires not so deep land, because the root runs horizontally, and keeps near the warm surface.

A farmer seeing the nature of the plant, and the land suitable thereto, may square his affairs accordingly, in suiting proper crops to proper land.

A voluminous writer tells us, that the lands of England are more subject to run to natural grass than any other country whatever; insomuch, says he, that it is with great labour and expence we can keep it from getting head of the lucerne, and spoiling the crop.

This I grant is the case, and this alone is sufficient to shew, that in general, lucerne is not so valuable in these grassy countries as in dry, hot sandy countries; where natural grass, or any other plant that roots shallow is burnt up.

By said author's expressing England to be the most grassy country, I suppose he was a stranger to Ireland, or he must have excepted it; and why it should be so is easily accounted for, as it is occasioned by the moistness of the climate, and the coldness of the soil, peculiar to this kingdom. It has a cold clay sole, and intermingled here

and there with loughs, lakes, morasses or bogs, the damp from which is exhaled by the sun, therefore softens the air, and again descends in thick mists or fogs, heavy dews and small rains, which always keep the land wet, the grass green, and in a growing state. The rain is never so heavy as in England, but much more constant.

But England has few bogs, lakes or loughs in her, therefore the air is more clear and dry. The rains of England fall seldom, but much heavier. Also the winter frost, and the air is sharper and more intense. All these considerations must shew that Ireland is the most grassy country of the two.

C H A P. XX.

How to manage Saintfoin, and its perfection.

SAINSTFOIN is a valuable grass, and particularly where land is rocky, gravelly, or sandy; and though, in general, clover is the best crop for this climate, yet saintfoin may answer in some places very well, where the land is subject to rocks and stones, which makes meadow very scarce, (tho' the summer herbage is good and plentiful) as the soil amongst these rocks is naturally good, where it can be cultivated so as to be brought to any tolerable tilth.

On such sown saintfoin, and if the soil be ever so scanty, it will strike into every small nich or crevice, and seek its nourishment very deep, where no other grass will live, or indeed, can get a footing.

It is also good for soiling cattle, but in this lucerne has the advantage, as it is of

a quicker growth, and less stagnated with cutting; but, as I before observed, this is of little signification to Ireland, as it abounds with good summer herbage.

It is winter feeding that we are to consider, as also to keep the land in full profit till the return of natural grass, after long tillage; and this is best effected by the two grasses, clover and saintfoin; clover for the wet and smoothest land, and saintfoin for the sandy, rocky, or more stony parts thereof.

As I have, in a few words, given the virtues of saintfoin, I shall not make a long chapter on the management thereof; as there is little alteration to be made between the raising saintfoin and lucerne, or clover.

Saintfoin may be sown earlier than clover, or lucerne, as it is in less danger of being hurt by the frost. The land must be well tilled, whether it be sown alone, or among corn: if it be sown amongst corn in the broad-cast method, harrow the

ground once in a place, after the corn is sown, before the saintfoin is sown.

This will make the ground a little level, that it may not be buried too deep in places. Yet as it is a large husky seed, it must have a covering, or it will not grow; but, by being harrowed in when the land is pretty rough, it will be all sufficiently covered, provided it be well harrowed after.

If it be sown in drills amongst the corn, stretch a line and scatter the seed along it, leaving intervals, the broadest about three feet, and the narrowest eight inches, as directed for lucerne.

If it be sown by itself, it must be got into the ground by the first of March.

Some will sow it at Michaelmas, but I do not think this a good time, for it will not be a great deal earlier, besides, a severe winter may hurt it; and it is further to be considered, that by keeping it out of the ground 'till spring, the ground can be winter-fallowed, which will add greatly to the fertility thereof.

If it be sown in drills, and alone, sow it in every sixth and eight furrow, as directed for lucerne; but have a care, not to cover it above an inch deep, at the most. Four bushels of seed is generally used to an acre in the broad-cast, but half a bushel in the drill way, is full enough for an English acre.

Lay up the sainfoin for hay about the first of March, and it will be in blossom about the first of June; when it is full in flower, it is time to mow it; manage it in making, as clover. Observe in eating it with sheep, not to eat it too near, which will damage the root, and put it in danger of rotting, if they enter upon the head of the root; it is also dangerous to turn large cattle into a crop of saintfoin, till it is well established in the ground, as they will be apt to tread it up and spoil the plants.

The best method to manage saintfoin is to mow the first year, and caution the scythes-man, not to cut too near.

The next year sheep may very well be fed on it, and after this it may be pastured or mown at the farmer's discretion, as the roots, by this time, will be well established.

C H A P. XXI.

On Rye-grass, its perfection and management.

RYE-grass is a native of our own kingdoms: its quality is such, that it will grow in almost any kind of land. In cold clay, or wet land, it flourishes greatly; it will also grow well on high, dry, or sandy land; which is very extraordinary, as the opposite extremes are so great.

It is not nice, for it will grow amongst any sort of grass; it will also incroach amongst corn, but while it is stealing its footing there, it is deemed a weed, and is known by the name of darnel. It flourishes greatly by culture, and will grow to the height of four feet, upon good land. The seed also grows large in proportion, and full of meal.

There are two sorts, one called droke, and the other darnel, in Latin, lolium. They are both of nearly the same quality: there is no knowing the seeds asun-

der, they are so nearly alike; the droke has a little larger or fuller grain, and I think is something more delicate in its growth, for it generally flourishes best in tilled ground, amongst corn. It produces a far greater head of seed than darnel. I have counted a hundred and thirty five seeds in one ear.

The ears of droke and darnel differ considerably. That of darnel, or rye-grass, grows close to the stalk, in two rows; but droke has a spread, ragged head, of many branches of five or six inches long, spreading from the main stalk, on the end of which branches the seed grows in bunches.

There is the same distinction to be observed in common hay-grass, as to the form of the ear; for though the root, stalk, and seed are nearly alike, yet the ears differ, some having an ear like darnel, and others a loose, open, spread ear, like droke.

The greatest virtues of rye-grass are its early growth, and its good quality of

growing on any sort of land. These two excellencies should induce every farmer to provide himself with some of it. There is no farmer but would be glad of a piece of early grass to feed lambs on, or if he had not lambs, to turn in his cows that are generally dropping their calves in the spring, which would be greatly forwarded in their milk.

It is also excellent feeding for recruiting calves and foals, who have hardly escaped the severity of the winter.

In short, a few acres of rye-grass would be of more value to a farmer, than he can well conceive; and when his natural grass pasture comes to a head, he may lay up his artificial grass-land for hay, and not doubt of a good crop. Rye-grass is also wholesome feeding to mix among clover-feed when sown, as it will help to prevent cattle from hoving.

However, though I have said so much in setting forth the advantages of rye-grass; yet it is not without its fault, and this is, its being an impoverisher of land,

though not in a very great degree; for a crop of rye-grass, with the land laid down in heart, will hold good for ten or twelve years.

Your best oeconomy is to mow it one year, and graze it another, alternately; and though it may be its property to reduce land a little, I do not think a farmer can sow a better crop, provided he does it with discretion, and sows it on his strongest wet clay land, or where clover will not succeed so well.

But where clover will thrive, it is surely preferable to all other artificial herbage; and if I recommend rye-grass, it is only for about five or ten acres in a hundred, to be applied chiefly for spring-feeding.

The culture of rye-grass is very simple and easy. It may be sown amongst corn with any sort of grass-feed, or by itself, as there is no doubt of its growing.

If it be sown with clover and barley, which is the best management, sow two bushels on an English acre, but if it be

sown alone, four bushels is the complement, and so in proportion for an Irish or Scotch acre.

The old broad-cast way is the best to sow it in, for which chuse a calm day, lest it should blow on heaps as the seed is light. It may be sown with the corn, for it will take as much harrowing, being a light seed. Neither is there much fear of burying it too deep: and yet it will grow if it lie above ground.

Where grafs-land of any sort is too thin, rye-grafs, or white hay-seeds, may be sown on the surface, and rolled, and they will grow the first rain.

The greatest care must be taken to mow rye-grafs in the proper season; if no regard be paid to the seed.

The time to mow it is at the first shooting of the ear, when it is full of sap; but if it be for seed, let it stand till the ear begins to turn brown. There is a medium however, to be used between both, and that is to mow it when the ear is full, but the seed not above half ripe; by

this a good deal of juices are caught in the stalk, and the seed ripens and hardens as the hay is making.

The seed will be small but sound, and will grow very well; it must be threshed like corn to take the seed out. An English acre may produce upwards of thirty bushels of seed.

C H A P. XXII.

The perfection and management of Burnet.

THE world is obliged to one Mr. Bartholomew Roque, who has for many years last past, been a farmer near London, but is a native of France. I mention his place of abode, because the lands and climate near London, differ greatly from those in Ireland, Scotland, and the north of England.

In 1761 was the first time that this plant was cultivated for the use of cattle, it is a pimpermell, and commonly cultivated for fallad, has a smell very like green cucumber; its seed is rough, like spinage, and much about the same size, its shape is a triangular oblong; the plant never grows high, being of a spreading creeping nature, and has a very bushy top; it also has a long root, and runs perpendicular, therefore requires a deep soil. Mr. Roque's account of it is as follows:

Says he, it must be sown on sandy or gravelly ground, and the longest drought will not hurt it, it also will either grow or keep green all winter; it will grow to about half a yard long in the winter half-year; it may be mown twice in the summer, and will produce two crops of seed; it may be fed all winter with safety from killing the plants; sheep must not be allowed to crop it too close, lest they damage the root.

The season for sowing it is from February to July. It will bear transplanting, but it must be sown the broad-cast way; it must also be trenched two or three spades deep, but take care, says he, not to turn up dead ground.

Sow twelve pounds of seed on an English acre; harrow the ground before sowing, and lightly after; when the seed is ripe, thresh it between wet and dry, the hay is very good feeding for all sorts of cattle.

He says, that if it be laid up for meadow, in May, it will be ready to cut for

seed the beginning of July. If it be mown for hay, (having no regard to the seed) it will bring three crops in a year, and must be cut for hay, just before it begins to flower; it must be made for hay like any artificial grass.

Such is Mr. Roque's account of burnet; and as he has a right to know better than any other person, being the first introducer, I shall neither add nor diminish from his experience.

However, I cannot help taking notice, that if we cannot raise burnet to perfection without digging two or three spades deep, (as he directs) I am afraid the expence will over-balance the profit, since an acre of ground by such digging or trenching, and that only once over, will cost about six pounds, besides seed, manure, land-rent, and all other expences. Again, if we be to take care, and not turn up any dead soil, we must not go above five or six inches deep, because in fact, all that lies below the upper-stratum, or corn mold, is dead earth, till it is turned up

to the air, and incorporated with manure or roots of some sort or other, for these are the principles that must enliven, ferment, and bring it to an active body, for till then it is a dead one.

So that in short, I cannot tell what sort of soil Mr. Roque expects us to work in, except in garden-mould, whose upperstratum or surface, is kept two or three feet deep by constant trenching.

I rather think he should have told us to take care, and not throw up the understratum, except it can be done with safety, not to hurt or spoil the corn mould, which it certainly must do, if it be a hungry, cold, red clay, or ramill. If this be the case, as doubtless it is, the farmer must first examine how deep the staple of his land is, and fix upon that which suits it best, being the good deep sort; it is true a strong clay bottom may be made to answer for it, but it must be by the dint of labour and manure.

C H A P. XXIII.

On different kinds of Manure.

MR. Tull tells us (and very warmly supports his assertion) that dung is a useless article to a farmer, particularly in corn-land, and recommends tillage before it; but daily experience tells us, he was in some degree mistaken, for though I admit, and am as clearly satisfied, as he could be, that plowing will enrich or fertilize land to a great pitch; yet, I am well convinced, that dung, manure, or compost of any sort, which bears a proportion of salts or fertilizing sulphurs, will cause a fermentation, by adding to, and mixing with the salts of the air, and therefore doubtless it adds to enriching the soil.

Again, though reason speaks so much in favour for enriching the soil by plowing, and though Mr. Tull, and all the authors in the world were to make it as

plain as one and one makes two, that tillage is sufficient to make poor land rich enough to bring onions (as it will) yet nine tenths of the farmers would not follow it, and though a farmer may give his land a good dressing, fit for any crop by twelve plowings, at about thirty shillings expence; yet he would rather bestow three or four pounds an acre in manure to put thereon. So blind is man to his own interest, particularly if it lead out of the old road.

For my part, I am of Mr. Tull's, and several other authors opinion, therefore shall not manure corn-land, but enrich that by plowing, and lay the manure upon grass-land; where reason tells us it is of the most use for several reasons.

First, because grass-land lies in a close solid body, therefore is deprived of the enriching qualities of the air which plowed land enjoys or receives every time it is turned up.

Secondly, it nourishes the roots of grass, and suppresses or retards the growth of moss.

Thirdly, it is observable, that manure always sinks, therefore if it be laid on when in tillage, it is an equal chance, but one half of it will be lost, because, what the plow turns to the bottom of the furrow, still keeps sinking lower and lower, till it get out of the reach of the plow to turn up, or plant to feed upon; but on the other hand, when it is laid on the grass, or lay-land, it drains through the surface in its passage, ferments with, and lightens and opens the earth, and makes it rich and mellow.

Fourthly, dung in particular, breeds weeds, flies, worms, &c. which causes smut and mildew.

All these reasons must appear very plain and obvious to a farmer's understanding, and which I would have him to bear in mind, and when he reads over the following list of manures, he may the more easily determine with himself, how to adapt this, or that to its proper soil, or part of husbandry, according as it suits his conveniency for carriage and cheapness.

ANY thing that has the most salts or nitre, is the richest manure, and therefore a less bulk is required to be laid on the land.

As for instance, some sort of marl requires to be laid nearly as thick as the plow goes, and others not much thicker than lime, being so strong, that were too much laid on, it would overpower or destroy the land, to such a degree, that nothing would grow well for two, or three years after. Marl will last longer in the ground than any other manure. I have known land which has given fifteen good crops running, after being well marled.

Few farmers but what may know which is the best manure, and the easiest come at, according to their own situation, therefore shall leave them to judge for themselves, which suits their purpose or situation best.

Horse and cow dung is good almost for every sort of meadow-land, but I do not approve of it for corn; the former

is the hottest in nature, therefore must (to chuse) be laid on the coldest land; every one knows best what condition his land is in, whether rich or poor, for thereto it must be suited in quantity.

Pidgeon-dung is a very rich manure, and will bear land-carriage better than most others, as a little will go a great way. In England it will sell from ten to thirteen pence per bushel, forty of which will give an English acre a good dressing; it must be sown upon the ground, and harrowed in with the grain, by the way of a top dressing, it will be found to enrich the land two or three crops.

Those that would make the most of a pidgeon-house, should spread over the floor, every ten days, three or four bushels of ashes, which will help to keep the pidgeon-dung from caking together, and make it spread even, and go farther.

Hen or fowls dung, of all sorts, should be mixed with ashes, for the above reason.

Little-house dung is one of the richest of manures, but the least regarded, on ac-

count of its soft, stinking, nauseous quality; but this is easily cured by throwing a sufficient quantity of roch-lime into the little-house, which will dry it to such a consistence, that it will spread as well as ashes, and have no disagreeable smell.

Thirty bushels will spread an English acre, harrow it in with the corn by way of a top dressing, or spread it on in February for a wheat crop.

Soot is a rich manure for any kind of land. Writers differ greatly in their opinion, whether coal or wood-foot be the richest or best, but this is throwing words to the wind, as no one will change his fuel for the sake of the difference in the foot; the matter is so trifling, that it is not worth entering into any particulars about. Soot is foot, and he that lays sixteen bushels on an English acre, of any sort of foot, gives his land a good dressing, and less will not do: it must be harrowed in with the corn, by the way of a top dressing, or it may be spread after the corn comes up, and it will destroy red

worms also. It will do very well for meadow, provided it be laid on just after the hay is got off: it will last five or six years so as to answer for crops.

Ashes is another good manure for a crop or two, and particularly for turnips, as turnips from burn-beating are the sweetest and best of all others.

Ashes are raised by several means, and from various principles. Some by burn-beating, others from our constant firing, such as coal, turf, or wood; the richest of these is wood: the next in value is turf, and the worst of the three is coal; tho' between turf and coal there is no material difference; all sorts of ashes lose much of their strength by being thrown out of doors to get wet; they will last in the ground two crops.

A hundred and sixty bushels of wood-ashes, and two hundred and twenty of either turf or coal is the due for an Irish acre; and so in proportion for an English one; they must be harrowed in, but if for wheat land, it is best to spread them

by way of a top-dressing in February.

Burnt clay, or backs of ditches, is another forced manure, and will bring one good crop; about three hundred and twenty bushels on an Irish acre, being two bushels to each square perch, will give land a tolerable good dressing: this must be harrowed in with the corn, as so much carriage going on wheat would spoil it.

Now I come to treat of the mother of all manures, namely, salt; for every sort of manure is higher or lower in value, according to the salts it produces; and every sort of manure is proportioned to the land according to the quantity of salts or nitre it is thought to have in it, and not to the bulk.

Formerly salt was thought to be an impoverisher of land, but experience has taught wisdom; it is now found to be otherwise, provided it be duly proportioned to the state the land is in, and mixed to mollify it as follows, viz.

Take six bushels of salt, six bushels of lime, and six bushels of dry ashes, mix all

together, let them lie some time to incorporate together, then spread them on the land, and harrow them in with the seed; this is a sufficient dressing for an English acre, for it is better to repeat it, than to lay too much on at once.

By being thus mixed, one particle incorporates and mollifies the other; salt in itself is rather too severe and harsh in its nature, and if laid too thick on, might prove of bad consequence; whereas, if conveyed into the earth by a soapy smooth method, will prove the very enricher the earth wants, to send forth vegetation; this will last for three crops.

I am convinced, if a farmer was to mix salt with any sort of earth or manure, and let it lie long enough to incorporate, he might lay it on thinner in bulk, in proportion to the salts it contained, and he would find his ends in so doing.

Sea-weeds, shells, fish, sea-water, sea-sand, all these bear a proportion of salts or nitre, therefore must be esteemed a manure, though such will not last

more than two years in a tillage crop.

Old rags, rotten sticks, or in short, any thing will make manure, that will rot or putrify; for by such comes on a fermentation with the earth; and by crossing nature in any case, makes it work, ferment, and divide the particles of each other. Even taking one piece of soil ten or fifteen perches from its native spot, and mixing it with another piece in the same field, will set it a working, so that one will help the other in fertility.

Lime is a manure known by every one, though but few know rightly how to proportion it to the land, as some land will require more by twenty bushels an acre than others; and on the other hand, a hundred bushels of some lime will be strong, and give the land as good a dressing as an hundred and thirty of others. A farmer must consider all these circumstances before he can be a thorough judge how to dress his land properly: he must observe, that the deeper the corn mold is, the more lime it takes to enrich it;

and indeed this is the case with all sorts of manures, therefore he must bear this in mind; it will last eight or nine years.

An hundred and fixty bushels being one on every square perch, is sufficient for the worst land in England at one dressing; but if the lime be stronger than common, lower the quantity 30 or 40 bushels: the strength of the lime is known by the quantity of sand it contains, for the more greet or sand, the weaker it is.

The way to try lime-stone is by dropping a little aqua-fortis on every stone, that is likely, and if it hisses and froths, it will make lime, but it will take no more effect on any other sort of stone than water would.

Lime is one of my favourite manures, as I have seen it work miracles, and if properly managed by proportion, never fails its proprietor.

The best way to try marl, lime-stone gravel, &c. is with vinegar: take a glass of vinegar, into which put a little marl

or lime-stone gravel, and if it be good, it will work up, froth, and fly in sparks over the glass like champaign, and make a noise like new barm; but if the earth be poor, the vinegar will take no effect, but the earth will fall to the bottom without life or motion, and the vinegar will be fine above it.

Soaper's waste is a very good manure, about twenty tons is sufficient for an English acre.

Large quantities are made use of about Liverpool, which is taken over from Dublin for ballast of ships. They generally sell it for about three shillings a ton: the land will receive benefit from this dressing for five or six crops.

Ashes made of weeds, for the time it will last, is nearly as good manure as can be laid on land, and there are few farmers but have plenty of it about their houses; but the way to make the most of them, is to dig them up by the roots, and take a sod along with them; by this they will make a greater quantity of ashes, and

the roots are fuller of salts than the top; this is spent by the first, therefore the second crop will not receive much benefit from it.

Forty bushels will give an English acre a good dressing; harrow them in with the grain, or they may be spread on green wheat any time in winter or spring by way of a top-dressing.

The compound of manures as follows, I have tried, and find to be a great enricher, and very cheap, viz.

Take eight bushels of bay-salt, the like quantity of lime, and the like quantity of ashes, mix all these together, and let them lie two or three days in a heap.

If you intend it for corn-land, throw up the corn-mold in the middle of the field you intend to manure, to the bulk of about sixty bushels, with this mix the compound well, then clap it up close in a heap, and turn it every week till you lay it on the land; the oftener you turn it, the better, as the air will assist the different particles in working or fermenting together.

If you provide it six or twelve months before it is wanted, the better and smoother it will be. This is also to be applied as a top dressing, either to be harrowed in with the grain, or sown over green wheat in winter.

If you would lay it on lay land, mix it with backs of ditches, or the like, in the most convenient place for carriage; the best time to spread it on the meadow-ground is about Michaelmas; but if cornland, harrow it in with the seed; this is a due quantity for an English acre.

The expence in the middle of England would be about twenty shillings. And the ground will be the better for three or four crops.

Malt-dust is an exceeding good manure for strong or deep land by way of a top-dressing, either to be harrowed in with the seed, or sown on in the beginning of February.

Sixty bushels is a good dressing for an English acre. It is particularly good to sow on a crop of green wheat, but if it

be sown among spring-corn, it must be harrowed in along with the seed.

It will answer for sand-land, but in this case it should be laid on early in winter.

This manure will not last longer than two crops.

On Liquid Manure.

THIS is a stagnated water, of a rich green, or blackish colour; and few farmers in England but what have it near their house by way of horse-ponds, and where cattle drink or stand to keep them from flies in summer, which by their urine and dung is turned green or black, and made very rich; also where dunghills discharge themselves into, as there is generally a receptacle for such near a house.

I am greatly surprised to see this valuable manure made no use of in England, Ireland or Scotland; did the farmers know the value of it as well as I do, they would not have one gallon lost.

In Germany and Flanders they think

more of it than they do of a dunghill, and will go and buy a pit of liquid manure, and carry it several miles.

They make there little-house dung into liquid manure. In short, I know no manure that is more certain to give one good crop than this.

The first time I tryed it was in watering a garden out of a horse-pond where the dunghill dripped into; I found a sediment at the bottom, which I constantly, at the time I was using it, kept stirring from the bottom, so as to raise all the sediment or manure.

I never used any other dung, yet I had remarkable great garden crops; such lettuce I never saw, my goss lettuce was like cabbages: I watered my wall-fruit, such as peaches, nectarins, apricocks, figs, vines, and cherries; and I never in my life, either had or saw so great crops.

The next time I had an opportunity to try it was in this manner, viz.

It happened to be a dry summer, and corn was dear, which was the occasion of

many beggars, which, indeed, Ireland never wants, (for it was in Ireland) being naturally of a charitable disposition I gave a good deal away.

When sturdy able beggars used to come, it was natural to ask why they did not work; the answer was, they could get none. At this time I had little employment for labourers, however I was resolved to strike out some work for them. I had a meadow near the house, which was burning by the heat of the sun, for it was a very hot time.

I got tubs that held about four gallons each, and agreed to give every beggar that said he wanted work, a farthing for every tub of water he carried out of a horse-pond, and spread over the field; I kept the water always stirring, to raise all the mud I could.

This scheme answered two or three good ends, as far as it continued to take place. First, it got the people a little money. Secondly, it raised me an exceeding good crop of hay. And thirdly, it ef-

fectually cleared the house of beggars; for it was soon reported, that if they came near my house, they would be made work; but as it proved, this was the worst part of the story, for they left me too soon; if they had staid I should have had a good crop of hay through the field, but they left me by the time an acre was manured; it cost me between four and five shillings, but a good many tubs were carried gratis, for some of them, if they had carried two or three tubs, if I turned my back, or went into the house, they threw down their vessels, and sneaked off without asking for their change.

I would advise every gentleman or farmer, to provide themselves with a stanch pit, for this purpose, so situated as to receive all the drippings of their dunghills, hog-yards, and washing-water, or the like.

Fix a hoghead in a cart, the hind part of which must be lowest: inclose the cart with boards, and the hind board must be bored full of gimlet holes all the breadth

of the body; the top of the hogthead being behind, let go the water, and the gimlet holes will divide it the breadth of the cart in the nature of a watering pot. Carry out your water in the first dry time, so the land will not cut; it is valuable for grafs or corn: broad wheels are properest for this work.

On Clay and Sand.

THE most desirable state of land, is that of a loamy clay, it is known in some parts in England by the name of warp-land; it is in a middling state, neither a binding clay, nor a loose sand, it is a mixture of both, but the clay is most predominant, which is the reason it is called a loamy clay; it is of a blueish greasy colour; it is generally of a deep staple, and if it be well tilled, scarce ever fails of bringing a good crop of any sort; nothing can be sown in it (suitable to the climate) but it will make flourish.

The next in value is that of a loamy

sand; this is also a mixture of clay and sand, but in this the sand is most predominant, therefore the emphasis, or stress of the word, is laid on sand: this staple of earth extends itself to that of *hasel* earth; for tho' *hasel* earth and *loamy* sand differ in name, its quality is nearly alike, only the lighter and opener it is, the more sand is in the compound.

Sometimes, indeed, the sand is mixed with a black, light, smooth earth, inclined to a turf, or peat mold; this is a light water-shaken earth, and lower in value, than if mixed with a strong clay.

In my travels through England I have often seen a farm, that one part was a strong, tough, obdurate clay, and another a light, blowing sand; so that, in fact, the two bodies, separate, lie in a barren, useless state; if we lay dung upon the sand, its loose, open nature, soon admits the salts to drain through it, so that its virtue is not valuable more than one crop or two; if we lay it on the tough clay, its particles are too weak to adhere to it, or open

or divide the solid congealed body of clay, so as to work it by fermentation, and open or divide it into small particles without an immense quantity.

And where there is so little laid on, as not to establish itself into this consolidated body, or move it by fermentation, it melts away with every shower of rain that falls, and runs off by the surface, or purges itself out of any vent-hole it can find,

But if a coat of sand was laid on the bed of clay, it would be sure to make its way amongst it, because it is of a cutting, ponderous, searching nature, therefore it will divide the glutinous clinging body of clay into small particles, which would cling or stick to every grain of sand.

The nature of the two bodies mixing together thus, admits, or rather opens a passage for the air to penetrate amongst it, so cause a fermentation; for nothing will, or can, ferment without air.

It is the air that raises every thing to life and action, it is the air that is conveyed into drink in the body of barm, that

makes the drink work, or ferment; this is the case in flour also, for by conveying the air among the flour by the means of the barm, causes a fermentation, for barm is scarce any thing else but air; you see if you put new ale into bottles before it has purged itself of barm, or, more properly speaking, air, it will burst the bottles.

Or if you drink it, you convey, in the body of the drink, air into your own belly, which you generally discharge soon after in a breach of wind.

I mention these things to open the ideas more fully to my reader, that he may know what I mean by fermentation; for if he do not open a passage into the body of clay with some instrument or compound, so as to admit, or make a passage for the air to penetrate therein, to raise it to action by fermenting, it will remain a dead unactive body, and if any seed happen to be bound, or inclosed therein, it will never grow or vegetate, till the earth is opened to give it air.

Any sort of seed that contains an oily matter, such as rape-feed, cabbage-feed, turnip-feed, ketlock-feed, mustard-feed, or the like, will lie in the ground a thousand years or more, and will neither rot nor grow till it gets air.

The oil preserves it from rotting, and grow it cannot without it be raised to action by fermentation, and such fermentation cannot arise without air.

This is evidently experienced almost every day, for if we plow up a piece of lay land that has not been plowed for several generations, there is great odds, but upon being turned up, some of these oily feeds I mentioned will grow, and it is evident that they would have grown before if they had air.

I mention these things to prove how necessary it is to open the earth either by tillage, or mixing different bodies of different natures together.

And as we see that loam is the best sort of corn mold, how easy is it to make a loam by mixing sand and clay together?

If a field be a strong clay, lay a cart-load of sand upon every square perch, and this will make a compound, or body of earth, commonly called loamy clay, because clay is the predominant article.

This will open, and divide the body of clay, the air will incorporate therewith, and bring on a fermentation, which will swell, open, and reduce the earth to a friendly consistence, which will admit the roots of plants to incorporate or search among it for their food.

Suppose a field be sand, it is of little use perhaps to its proprietor, as it will not feed either the roots of corn or grass; that is, it is of too open a nature, and wants a slimy, smooth, glewy substance, (such as clay consists of) among it, to unite the greety, pebbly particles of the sand together, which before was each a calised hard separate body, out of which issued no nourishment for plants, as the grain or staple was too coarse or large for the fine fibres of a root to feed upon; but when clay is introduced amongst it, the

slimy, smoothen particles thereof wrap round or clag about the grains of sand, which being assisted by the air, and the salts thereof, divides these little stubborn round bodies into smaller particles by shelling, or melting scale after scale from them; so that the body of the sand, and that of the clay, being melted into a thin, fine, smooth matter between them, they create a nourishing fine food for plants.

Thus farmers see how essential it is to mix sand and clay together; a two horse cart-load of clay, upon every square perch of sand-land, would change the nature of the soil to such a degree, that it might be called a loamy sand, which is the second best earth.

The above is taking in all sorts of clay and sand as it speaks in general, because a mixture, let it be what sort it will, is valuable; but however, there are different degrees of both clay and sand, and where we are so lucky as to find on our lands, that which contains the most salts, it is the greatest treasure. Most marls are a

fort of clay which differ according to the colour and weight of salts contained in each.

According to the quantity of salts you suppose your marl or clay to contain, and the depth of soil or corn mold you have to work in, so proportionably lay on your marl or clay, and sand.

The blue marl and brown marl, are nearly of one strength; they are generally very hard to be dug, sometimes the labourers are obliged to use pick-axes to loosen it with, ready for the spade.

These are good forts of marl, and to be found in many places in England and Scotland, where they lie disregarded, owing to their owners not knowing their value. When they come to be laid on the land and exposed to the air, they fall to dust, and melt with rain, or frost; any clay or marl that does this, is sure to contain a great body of salts, for it is these that shiver and melt the earth about them to come at the air, and the air at them.

A deep corn mold, and particularly if

fandy, will take about three cart loads to two square perch at $5\frac{1}{2}$ yards per perch.

The next marl in quality, and which is most suitable to strong land, is white shelly marl; it generally lies under bogs and morasses; it is light, but of a very rich nature, has a great likeness to lime, and indeed will almost go as far as flaked lime in manuring; however it may be laid on at a cart-load to each square perch, without hurting the land, though less may do.

The next is a free stone marl, it is white as lime, but has no shells in it; it is most proper for clay; it has a sharp acid spirit, and therefore must be laid thin on the land; it is the worst of all marls.

There are three clays, the blue, red, and white; the best of these for manure to sand-land, is the blue, as it comes the nearest to marl; but they will all melt and open when mixed with the sand, as I have above explained, and the more you lay on the better.

THERE are several denominations of sands and gravel; of these the lime-stone gravel is the best; it abounds greatly all over Ireland, except the county of Cork; this is of a very rich quality, particularly if it be of the marly sort; in fact, it is no other than marl, only that it is mixed with a small blue lime-stone, from the size of a hassle-nut, to a good sized paving-stone, which would all burn and make good lime: it is those that give it the name of lime-stone gravel; it is a very valuable manure, and which contributes greatly to enrich Ireland. A coat of this will change ling or heathy ground, to shamrogs or wild clover; it is to be met with in Scotland and England in some places.

There is another sort of lime-stone gravel, which is of the greety sandy kind, but it is not so good as the above marly sort; it is suitable for clay land.

There is a sort of sand in Ireland, that is also very good manure for strong lands;

I have seen it in England, but never saw it made use of. In fact, the English farmers are not so prying into the bowels of the earth as they ought to be, to find out these valuable manures: this sand is of a rough, round, greety kind, a blueish cast; it abounds much with salts; I have seen it produce amazing great crops of both corn and grass.

Sea-sand is another good manure, where farmers are situated convenient, so that carriage will not bring it too high.

The red or blue sand that lies on the surface of the earth, in many parts of England, and such as we raise corn in, is no manure, except to clay-land, as above observed; and it is on such land as this that clay is so valuable, where marl cannot be got.

Chalk is an excellent manure for clay-ground, and will last many years; it is good for sand, but not of that value as for clay.

What adds to the value of chalk, clays,

or marls, is their lasting so long in the ground. If land be well covered with any of these heavy manures, it will shew their value, by throwing up good crops for ten or fifteen years.

Such bodies of manure are very pondrous, therefore generally keep sinking till they get below the plow-gate to turn up: when this happens, two plows ought to follow each other in the same furrow, plowing about three inches deeper than common; by this you turn up the chalk, clay, or marl, to the top or surface again.

When you sow the corn, harrow it in, without plowing a second time, and sow the land down with grass-seeds; this is called trench-plowing, and a good way it is, in any sort of land that will bear plowing deep.

The best method of liming, marling, claying, or chalking land, is to lay them on the sod; and let them remain (after being spread) for one year or two before the land is plowed, in order that it may adhere, grow, or incorporate with the sod,

which will make it much more valuable and lasting; besides, the air operates more violently and quickly upon it, by being exposed thereto, which if it was covered with earth, it would, in some degree, be screened from it; and it is the air that causes it to open and shiver to pieces, and ferment with the corn mold.

C H A P. XXIV.

An Explanation of Names.

I Have kept up, as much as possible, to names generally known for implements of husbandry, &c. but as necessity obliged me to make use of a few to which some may be strangers, I shall explain them in the following few words, viz.

Breaking and swingling are the English terms for dressing flax out of the rough. In Ireland it is chiefly known by breaking and scutching.

Rating is the English phrase for watering flax, but in Ireland the word bogging stands for that of rating or watering flax.

Gripeing is the English term or name for small surface drains, made to take off the downfalls of water from corn or grass-land.

Taking up land is an English term for raising ridges high in the middle, by the

plow, when the horses turn to the right hand about, by beginning in the middle of the ridge.

Putting down is when they begin in the furrow, to plow and split the ridge in two, leaving the furrow in the middle, by turning the left-hand about.

When the English flax-farmers recommend their flax for its goodness, they generally say it has a good strong, clear, open harl; this harl is the skin or flax which peels off from the stalk from one end to the other, without breaking; this is called the harl.

A quarter of any sort of grain is two barrels, eight bushels, or thirty two pecks, Winchester measure.

Ketlock-feed is a black round seed, much like rape-feed; it grows as a weed with a yellow flower; and in Ireland is called brushebuy: it is full of oil, and would sell at the rape-mills to make oil of, at an inferior price.

C H A P. XXV.

The Author's opinion of the nature of Bog, and from whence it proceeds.

THERE are many names to explain this matter, as morasses, peat-bog, mofs, and bog; every country has its own name.

Before I begin to treat of reclaiming bog, it may not be amiss to give my sentiments, from whence it proceeds, and the compound it consists of.

We are told, that imagination is one of the quickest and most extensive powers belonging to the human being: true it is; for whilst I am viewing and examining, the many particles of sticks, straw, rushes, bones, &c. &c. that bog is compos'd of, and which seems to have been jumbled together in great confusion; I say, while thus I am beholding these marks and tokens of the wonderful cause my mind is struck with wonder, and my ve-

ry soul with pity for those unhappy sufferers, that in reality saw and felt the great confusion, distress and destruction of this sad catastrophe, as it is very clear to me, that the great deluge which destroyed the old world, gave birth or beginning (or what you please to call it) to the bogs. But as some of my readers may not have had an opportunity to see bog, or examine into the materials that compose it, I shall explain it as follows, viz.

Bog consists of a light, open, porous, soft body, and mostly full of water; and these two bodies of bog and water cover a great part of the earth. Upon cutting the bog into square pieces, about the size of a brick, and letting it dry in the sun, it becomes calised, close, and hard; when in this state, it is called turf, or peat, which is made use of for firing, and very good it makes, particularly when it is made on black bog.

If we break a turf in pieces, and inspect nicely into its particles, we shall find

it to be made up of straw, rushes, hay, moss, bits of sticks of many sorts and sizes, &c. &c. These are the general compound of what makes a bog, that in some places perhaps, is twenty or thirty feet deep; I say this is what the bogs generally consist of, but however, in some there are a great many more particles than I can mention. There has been dug out of bog at fifteen or twenty feet deep, human bones, wooden shoes, horns of cattle of several sorts and sizes; such as cows, deer, elks, &c. &c.

I once knew a human body to be found under a deep bog, which was quite entire, and as white as milk, but when it came to the open air, and to be stirred, it soon fell to dust.

Under every bog there is timber trees of all sorts and sizes; some will lie across each other, tore up by the roots; others broke off two or three feet from the roots, and the branches split from the trunk. Such disorder and irregularity plainly shews that it proceeded after this manner, viz.

At the general deluge, when the water arose so high as to overflow or cover the face of every thing in the old world, doubtless every light body, such as thatch of houses, ricks or stacks of hay, rushes, straw, reeds, sticks, &c. &c. rose and swam on the surface of the water as wreck, and when the waters abated, doubtless the currents were very great; it is also very natural to suppose that such wreck would stop and gather at any thing that would obstruct its course, such as tree tops in great woods, and the like.

It is supposed that the wreck on this occasion must be very much, therefore when some of it stopped at those woods, it would soon gather immense heaps, and the more the water left it, the faster it was bound thereon; and when the water left it resting on the tops of these woods, its immense weight crushed or broke them down under it, in such cross disorder as above described. And it is further observed, that all the timber lies quite under the bog or wreck next the

firm ground, and every tree that is thus broke off, lies as it fell close to the root it belonged or parted from. I profess upon consideration, these bogs prove the truth of a deluge so fully, that were there no other tokens or memorandums upon record, it would bear no manner of doubt with me.

As to what brought on the great deluge, whether by rain, or whether the earth gave way, and dropped into the great abyfs, it is a point not finally agreed upon by the learned. It is true, the scripture tells us, that God drowned the old world by forty days rain; doubtless it might rain forty days at the same time, but I must be excused from being of opinion, that forty days rain alone drowned the world, since a calculation, that may be made with a tolerable degree of exactness, proves that forty days rain, in a great degree, would not raise the water a foot high, over all the face of the earth, and much more to raise it fifteen cubits, (which is seven yards and an half) above

the highest hill, as was the case at this catastrophe.

It is true, if the great God pleased, he could destroy the world with a drop of water. But however it is not very probable that forty days rain overthrew the old world: but it is possible, and very probable, that the earth dropped or sunk into the main abyss; and it is also as possible that it would rise again, being the lighter body, and interspersed with air.

If we compare great things with small, drop a piece of wood, &c. into water, and it will perhaps go to the bottom, by the force of the fall, but will immediately rebound, or rise again to the surface; this I apprehend was the case here.

As to what the scripture says concerning the old world being drowned by rain, we may put it upon the same footing as when Joshua commanded the sun to stand still upon Gibeon, 'till he got his will upon his enemies.

Though we are sure that the sun is a fixed body, and that it is the earth which

moves: yet however, Joshua spoke as he thought in the literal sense, and God knew his meaning, and granted his request in one sense, for he ordered the earth to stand still, which answered the same end to Joshua.

This I suppose was the like case with Noah, for God said he would overthrow the world by water, and as rain was the easiest to be understood by Noah, it was conveyed to him in that sense. It availed nothing to Noah how it was to be effected, whether by rain or the earth dropping into the main abyss, since God's will was fulfill'd.

Besides, as I observed, it might rain all the time this great work was effecting; for as the earth was covered with water, the heat of the sun had more power over that element, to exhale it into the clouds, and when the air or the clouds were overloaded, it would then doubtless return in rain as usual.

There is a large book in folio, wrote upon this subject, by a very sensible au-

thor, wherein he proves very clearly, what I have here set forth, of the earth dropping into the main abyfs, and not drowned by rain, as is generally thought: and if the fenfible reader has ever feen the faid book, he muft be of my opinion; at prefent I have forgot its title, or author's name, tho' I have read it through.

But however, be it how it will, a general deluge there was, and that this deluge was the founder of the bogs, and that the materials of faid bogs, are made up of the wreck of the old world, is very eafy to be conceived by a cool-headed reader, that will give himfelf time to think, and digeft the above obfervations.

Bog being a compound of hay, ftraw, fticks, &c. &c. intermixed, jumbled, or wove together (as it were) in great diforder, one might expect it to be a mafs of dung, and fo then it was and would long ago have been melted into a folid body of earth, if the water had permitted the air to penetrate it, and caufe a fermentation, then naturally would have followed a pu-

trefaction; after this, it would have subsided, closed, fallen together, and become a solid body.

But as long as the water was permitted to lie thereon, it kept it always cold, not giving it time to heat or putrify.

There is a fall (it is true) from all bogs, and the water continually keeps running off, and in its passage, takes along with it many small nitrous or rich particles, as all bog water is black, and what makes it so, but the discarded particles of the bog being continually melting into it; for we are sure the rain that falls on the bog, is at the time of falling, as clear as in other places, therefore the bog continually keeps purging itself of its richer particles by the redundance of water that falls from the clouds; thus it alternately keeps receiving and discharging, by which means both the bog and the water is kept cold, and free from putrifying.

And farther we are to observe, that the ground under bog is always clay, marl, or some such solid body, which holds wa-

ter like a dish, therefore the bog is utterly deprived of any other means or passage to discharge its load of water, but thro' the surface; whereas, if the bottom was a sand, or sandy-gravel, it would be immediately drained, and would long ago become solid earth.

Therefore it is evident, that it is the water which keeps the bog alive, and if by ingenuity, oeconomy, and industry, the downfalls of water were not admitted to sink into the surface thereof, but immediately be conveyed into main drains, rivers, &c. the bog would soon become a consolidated body.

We see that at the verge of almost every bog, there is a bottom, on which grows a coarse sort of grass, which is sometimes made meadow of; this has formerly been as rank a bog as the rest, as plainly appears by the nature of the soil, and the bog timber lying under it, &c. but the firm ground is a little higher situated than the middle of the bog, which gives it a shade, therefore the water has left it, and

retired to the lowest place ; this shews that bog is losing ground, and more particularly where people strive to assist nature, by making canals, drains, &c.

This shews the advantage England has over Ireland, by their early improvement, witness the fenny countries, levels, Holdernefs, &c. I know places in England where one may travel for ten or twenty miles together, over improved bogs, which are now harrowable, pasturable, and good meadow-lands, though one may cut (perhaps) the heighth of a man, in turf, as may appear by their drains ; and under it a bed of bog-timber ; but then in such places, you see it well drained, laid out and improved.

All these are manifest truths, which every bog, the materials it is made of, and the situation it is in, can witness, and which may be evident to a nice inspector.

C H A P. XXVI.

How to reclaim Bog, with proper Seeds to sow thereon.

HAVING, in my last chapter, treated of the nature of bog, and from whence it proceeds, in this I propose to shew how to reclaim it in a short, easy, cheap method, as every thing loses its value that is too laborious and expensive.

A great many people think that the larger drains they make, the more effectually they will drain their bog, but here they are quite wrong, for if instead of one drain of eight feet wide, they would make eight at one foot wide, and disperse them advantageously over the bog, to catch and convey the water as it falls into the main drains, before it has time to sink or penetrate into the surface, they would save a great part of their money, and the work would be more effectual.

Experience tells us, that a drain of a

foot wide at the top, and carried sloping down till it comes to six inches wide at the bottom, is sufficient to drain the wettest piece of bog from any downfall of water; and there are seldom any ground-springs in bog; and if there should, this is sufficient to take it off.

As to the depth, I can fix no certain standard: every man's reason, and the nature of the land must be his guide in this case; for it may happen that he may have hills or rising grounds to cut through: if so, he has his guide or level along with him, namely the water; for he must cut them to such a depth as the water will follow him, which must be his general direction, and there is no better leveller than the water.

I give a necessary width, only supposing the ground to be level; but if he have hills to cut through, he must vary his cut in width at top, to give him sufficient room to work, and bring it to a proper breadth at bottom.

Fence-drains, I likewise set no bounds

to, as every one is the best judge what will turn his cattle.

First cut a head drain at the edge of the bog, where you think the best fall for water is, make it three feet wide at top, and carry it down with a slope, till it come to half a foot at the bottom, which determines the depth, and this drain is sufficient to take off all the water.

Confine the water to as narrow a channel as possible, by which means it will keep its course clear, and a drain will last longer without scouring or cleaning out; but on the contrary, if it be wide at bottom, the water will run with a thin sheet and a slow motion, so give the grass and weeds an opportunity to grow, and when they once get a footing, the drain is soon choaked up with the stoppage of every stone or stick, as well as the grass, that may happen to fall or grow therein.

The head-drain being thus made, lay out the fields as long as the bog will admit, but not above six or eight perches wide between each.

Make the side drains two feet wide at the top, and bring them to nothing at the bottom, then look over the field, and find out all the low places and bog-holes where the water stands: from these cut small surface drains eight or ten inches wide, the shortest way you can into the head or side drains.

These small drains are cheaply and quickly made, and are quite sufficient to carry off the water, so that the men may stand dry to dig.

Being thus prepared, examine the bog whether or no it be firm, so that bullocks or horses can go on it to work.

In most bogs or bottoms there are little round hillocks or lumps, perhaps a foot high, and two or three in diameter; these obstruct the plow so much, that in some places it is impossible to plow at any rate, in others perhaps they may not be so plenty; yet if there be any, they disturb the plow, and make the plowman make bad work. When this is the case, you must cut them off with the levelling

knives: then men must go with forks, and throw them to a side, in order to clear a road for the plow to go, then cut it across with the cutting knives fixed in the roller, as directed for burn-beating. All these are necessary preparations, before the plow can go.

Your bog being thus prepared, you must have two plows, one to follow the other in the same furrow; the coulter and sock of that which goes foremost must be very sharp, that it may cut easy, as the heath and rush roots &c. are very tough, the first plow must have a wider breech than that which follows, in order to throw the first furrow at a distance, that the following plow may turn the next furrow without touching it; thus they follow one another, the first plow always throwing its furrow over the second, by which means the first sod being covered with heath or ling-rushes, is kept uppermost, ready for burning; the second furrow forms and raises the ridge in the middle: the horses must go on the uncut

sod, close to the side of the furrow, for they cannot walk in the furrow when the sod is off, without sinking; and the intent of one plow following another in the same furrow, is to raise the ridges as high as possible, while the cattle have the sod to walk on; and it is very possible to plow three or four furrows deep, by the same rule of following one another in the same trench or furrow, and the cattle walking on the uncut sod beside it; but then as many plows as you intend to follow one another thus, must be differently prepared; as for instance, if you would plow two furrows deep, the first plow must have a breech sixteen inches wide, by which means it will throw the sod sixteen inches from the uncut land, that is, it will leave an open furrow sixteen inches wide, by which means, the second plow, which has a breech only twelve inches wide, will turn within four inches of the first furrow.

This last plow must be geared to go nine inches deep; that is, it must turn a

furrow six inches thick, and the first furrow three; therefore the furrow will be nine inches deep from the surface, or sod the cattle go on, and consequently the middle of the ridge would have nine inches rise; but as the first three inches would be burned for ashes, it would leave a rise only of six inches, which would be too little for so broad a ridge; therefore it is necessary either to make the ridge narrower, or have three plows to follow one another; the first, to clear a furrow twenty inches wide by three deep; the second to clear a furrow sixteen wide by six deep, the third to clear a furrow twelve wide, by six deep; by this the depth of the last furrows will be fifteen inches, and the ridge will have rise enough to give the water a fall into the furrow, and the furrow deep enough to take it into the drain.

As the second plow goes about five inches deeper than common, it is necessary that the cross and coulter be so much longer, in order that the beam may stand

higher in proportion to the depth it has to go; and also, as the third plow must go about eleven inches deeper than the common plow; the cross and coulter must be so much longer, in order that the beam may stand eleven inches higher, this alteration in the perpendicular way is all that is wanted.

As to the horizontal way, there is nothing more wanted than to alter the breech of the first plow, by making the breech pin, that goes between the mould-board and chip, as much longer than common, as you would have the furrow wider: it is also necessary that the mould-board be longer than usual, or else the turn off will be too sharp.

Reason will point out to the plow-man or plow-wright, that the mould-board must be proportioned in length to the width he makes the breech; the sole or chip need be no longer than common; the last plow will not want to be altered in the horizontal way, neither will the first plow want to be altered in the perpendicular way.

The muzzle on the end of the beam, on which the fwingle-tree is hooked, may alter the plow both perpendicularly and horizontally, therefore this will give the plow land sufficient to allow the horses to go on the sod.

All this is plain and easy to be understood by any one who has the least knowledge of the plough.

Let me advise my reader, who would reclaim bog, first to lay out the field in ridges, and the first year, only plow or reclaim every second ridge, by this (as the phrase is) he is killing two birds with one stone, for by raising, or reclaiming one ridge, he opens a drain or furrow at each side of the unreclaimed ridge, so that the year following it will be firm and dry; besides the advantage he will have in keeping the skin unbroke, to draw manure to the reclaimed land, or to draw his crop off, &c.

Then the year following, when the second ridge is reclaimed, the first will be got pretty firm to fulfil the said conve-

niency of passing and repassing.

If it should be a very soft wet bog, and full of bog-holes, &c. so that cattle cannot go to plow it by the above directions; then you must attack it with spades in the following manner, but in this method only reclaim every second ridge the first year, by which means the remaining ridge will doubtless be dry enough to plow the succeeding year.

Make your ridges forty two feet broad, which are two Irish perches; by this you can easily measure your mens day's work at night, and form a judgment what it will cost an acre, and how your men work, &c. and watch them the first day, and by this you will know what they can do, and insist upon the like every day; thus I have had good work done.

Cut your ridges straight with a line, for it looks very slovenly to have crooked furrows, and they are no easier made than straights ones; if they are once crooked, they will be always so.

Begin with spades, and throw the ridges

high in the middle, let each side have a gradual descent.

Nine inches taken from each furrow, and half-way up the side of the ridge, thrown on the middle, will give it a rise of about eighteen inches.

Bring the furrow to nothing, that is, with an even slope, having no sharp edge from the bottom of the furrow to the top of the ridge.

Land laid in this manner has no need of any but head-drains, for every furrow is a drain to the ridge it belongs; if it be a black bog, by no means bury the upper sod or turf that is covered with heath or any sort of rough grass, &c. as such are fuller of salts and sulphur than ten times the bulk of the under turf.

This upper sod must be cut as thick as reason shews it will burn, in order to raise as much ashes as possible, the more the better. The ridges must be thrown up before they are burnt, the better to warm the bog, and to preserve the ashes from being any of them buried.

But if you burn four inches of the sod, you must dig the furrow so much deeper, to throw on the middle of the ridge, in order to give it a rise in proportion.

About May, or as soon as you find the fods are dry, and will burn, make heaps of about a cart-load in each, at a proper distance, disperse them all over the ridge, in order to give the bog all the advantage of heat you can, for heat is of great benefit, as it sets the bog a-working or fermenting, by which means the particles thereof are divided, and become a kind of manure to itself.

I look upon the heat of fire to be as great an advantage to the soil almost, as the ashes; for I have observed in burn-beating, the places where heaps of fods had been burned, that though all the ashes were taken off, and even some of the earth pared away, yet that place had the best corn on it, and it is plain it got no other advantage from the burning, but the heat of the fire which brought it to a separa-

tion, and caused it to produce so plentiful a crop.

When thus burned, and the ashes spread, which ought to be finished by the twenty-fourth of June, sow turnip-feed very thin amongst the ashes, and as no horses can come on the bog for sinking, draw a light roller over it by men, the pressure of which, though the feed will not be well covered, yet it will strike root and grow very well, particularly if there happens to be a shower of rain soon after.

There is no need of hoeing the turnips, as that would lighten the bog too much; for the lighter it is, the worse, and this would add to the evil.

Eat the turnips on the bog with sheep, the urine of which greatly adds to the fertility thereof, and gives it a thorough dressing; besides, the trampling of the sheep will in all probability fadden it so much, that horses may go on it to plow for the succeeding crop.

It must be plowed very thin in this plowing, so as not to bury the ashes or

sheeps dung above two inches deep at most; also take care not to turn up any bad or unimproved bog, and the afore-said manure will have more advantage over three or four inches thick of soil, than twice the quantity.

About midsummer following sow your bog with rape or cole-feed, at the rate of one peck to the English acre.

After sowing, roll it in with men if horses cannot go thereon without sinking.

If you find the crop of rape be forward and good, eat it with sheep, which will give it another dressing; besides bog will bear eating very well, for the rape will keep growing in the winter, bog being not so subject to freeze as upland.

The beginning of June, in the year following, when the rape is off, another crop of turnips may be sown.

This will make two crops of turnips, and one of rape, which will pay a great deal more than for reclaiming the worst bog in Ireland or England, as these three

crops at a moderate computation, may be worth twelve pounds an acre, and by chance, twice or three times that money.

Whereas, digging, draining, and burning, by the above directions, would not cost above four pounds an acre; but if the bog be level and free from bog-holes, it will not cost near so much.

When the turnips are eaten off, which ought to be by the first of March, sow it either with rye or oats, but rye to choose, as we may now suppose it to be very rich and well reclaimed.

Above all things sow the seed very thin, or it will be all straw, but little corn; four stone of rye on an English acre, or six of oats are full sufficient.

About the first of April sow clover and rye-grass, or instead of the latter, white or common hay-feed, which may do as well, if not better.

Sow eight pounds of clover-feed, and four bushels of hay-seeds, on an English acre, and so in proportion for an Irish one.

When sown, roll it in; and observe never to alter the ridges out of the form or position they were first laid in by digging: always preserve the furrows in the same place.

Keep the furrows and drains open, to let no water stand thereon, which would soon wash the manure away, it having a ready passage out of this loose open soil.

It is a bad piece of husbandry to mow bog until it has been first graz'd a year or two, but this I shall reserve for the next chapter.

Remarks on reclaiming Bog.

I Hinted, under the article of reclaiming bog in the foregoing chapter, that bog ought not to be mown for hay, the first year or two, after it is laid down with grafs-seeds; the reasonableness of which will appear from the following observations.

Reduced-bog (particularly before it has been eaten) throws up at all, slender, weak grafs, the stalk of which is not able to support itself upright, but doubles, or as it were, kneels upon the second or third joint, so that when it is mown, it turns up brown at the bottom, and looks as if it were dead; and indeed, it is far spent, for the nature of the soil is of such an open, porous, weak quality, that it gives the sun great advantage to exhale the nitre or virtues of the earth, which nature conveys through the verdure or blades of the vegetable creation.

I say, that bountiful nature, thus assisted by the nourishing rays of the sun, goes on at a vigorous rate, 'till she has exhausted her stores, by the first vigorous onset of growing, and has been so active in throwing her favours upward, that the fibrous parts of the roots, which ought to be equally nourished, to make them grow and incorporate with the earth, have been robbed of their supply, by throwing all the strength of the land into straw or top, before the roots are firmly established in the ground.

This is certainly the case also with corn that grows on this open loose earth, it never feeds or fills well, by reason it exhausts all its strength in the first onset of growing; the soil or mould being so loose about the roots, gives the nourishing particles too free a communication thereto.

It is not because there is more nitre or richness in a strong clayey soil, than such that makes the corn be bolder, or fill better; no, this cannot be; for certainly there are more rich qualities in a dunghill than

in a strong clayey soil; yet the latter will produce corn, when the former will produce nothing but straw.

For the strong land is firm, close and solid about the roots of plants, so that the fibres thereof take in their supply of nourishment more gradually, and does not let nature overshoot herself.

Without doubt, this weak, light, loose soil, throws up as much refined substance into the straw, as, were it proportionably divided betwixt straw and corn, would produce a good crop of both, and the grain as full a body as on other land.

But could it be so contrived, this dividend should be by gentle, and proportionable checks in the growth.

This makes it necessary to eat reclaimed bog with sheep; which, by continual cropping the branch, as it springs, checks the growth, and makes the roots strike downwards, spread and incorporate with the earth, and also causes the stalks of the grass to stool and shoot out new fibres, which spread over the surface; be-

sides, the trampling of these light cattle, faddens the ground, and helps to bring it to a solid body.

This shews how assiduous we ought to be in employing all our industry and ingenuity to help the works of nature, by rolling and plowing at a proper depth, in such land as reason points out to want our assistance, and also to suit the constitution of such lands with seeds or grain best fitted to their nature, in order to raise every crop to the best advantage.

As for instance, a good and profitable crop of either turnips, rape, or cole-seed, may be got or raised from such reclaimed bog, and at the same time the soil improved to an amazing pitch of fertility; whereas, if these three crops were corn, it is a wonder if they would be worth reaping; straw it will produce, but very little corn, and what there was would be little better than what we call hen-corn, namely, small and bad. This I am convinced of from my own experience.

But if you do mow your bog-meadow,

observe that it be cut before it has done growing, that is, before it dies or turns brown at the root; in this case, the plants will strike out and stool just below the cut, and this also will cause it to strike into root; likewise the hay will have more substance or nourishment in it, and the after-grass or eddish be better.

TABLE I.

A Table, shewing the expence and profit of reclaiming an acre of Bog; if the first crop be Turnips, the second Rape, and the third Turnips. These three crops I shall put into three separate tables, that it may appear more clear to my reader, and suppose the first expence of improvement to take place as it were in April, 1768.

If it be a black bog that will l. s. d.
raise plenty of ashes, it may
bring a better crop of turnips
than up-land. I have frequently
had better crops from such;
however, I abate one fourth
of the value of a good crop,
supposing an acre only to feed
ten sheep, which if cost when
bought in December twelve
shillings a piece, they will sell
when fat, in April for twenty
four shillings each, by which
they will leave a profit of 6 0 0

If the bog be so wet and soft as
 horses cannot come on it to
 plow, it must be dug with
 spades as directed: it will cost
 for digging and throwing in
 ridges - - - - -

1 10 0

To turning and drying the fods

if wanted - - - - -

0 3 0

To burning ditto in May or June

0 10 0

To spreading the ashes - - - - -

0 1 0

To turnip-feed, rolling and sow-
 ing - - - - -

0 1 6

To forking up the turnips, and
 attending the sheep with hay,
 &c. - - - - -

0 10 0

To hay - - - - -

0 6 0

To market expences, sales-mas-
 ter, &c. - - - - -

0 5 0

To half a year's interest for nine
 pounds, which the sheep cost
 in December - - - - -

0 4 0

To eighty perches of side-drains,
 at two feet wide, and at three
 half-pence a perch - - - - -

0 10 0

 4 0 6

A Table on Bog.

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Brought over	-	-	4	0	6
To eight perches of head-drain, at three pence half-penny per perch	-	-	-	0	2 4
Total expence			4	2	10
Total produce			6	0	0
Clear profit			1	17	2

Note, I have charged this table as high in expence as possible; for there is an equal chance but the bog might be plowed, if so, it would not cost above twenty shillings, which would leave a larger profit: besides, I have allowed for draining the acre quite round, which if there was more than one acre lay together, it would have a right to be charged only for two head drains and one side-drain. However I would make every allowance that is possible a farmer might be out of pocket, on purpose that he might not be teased into more expence than he expected; but

all this I am clear in, as it is nothing
more than what I myself have practised
more than once.

TABLE II.

A Table shewing the expence and profit of an acre of Rape, raised from Bog after a crop of Turnips.

I have known at the rate of thirty barrels of rape raised from one acre of bog, Irish measure; but however, here I will only allow the farmer sixty bushels at 3 s. per

l.	s.	d.
	9	0 0

Tho' if his bog be good, and he manage well, he may be sure of almost double the quantity.

To straw to burn for ashes	0	6	0
	9	6	0

Total produce

It is a great chance whether or no the bog will want any preparation for this crop, as the sheep will tread and break it, by eating the turnips off, and we are sure there will be no

weed; but if it should want to be plowed, it may be done with one bullock and one man, for which we will al- low			-	-	-	0	2	6
To seed and fowing			-			0	2	6
To rolling (for it need not be harrowed)			-	-		0	0	8
To a man to go round the fur- rows, and several times in the year, lest any lumps of earth should drop in to stop the cur- rent of the water, to throw it out, &c.			-	-		0	2	6
To a boy two months, at 3 d. per day, to keep the birds from eating the rape			-			0	13	0
To reaping and threshing, and market expences, with carri- age, &c.			-	-		0	15	0
Total expence						1	16	0
Clear profit						7	10	0

Note, this crop is off the ground we
suppose, about midsummer.

TABLE III.

A Table on an acre of Turnips, being the third crop after the bog is reclaimed.

I shall here again only suppose l. s. d.
the turnips to feed ten sheep,
at twelve shillings profit each

Total produce	6	0	0
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To once plowing with one man			
------------------------------	--	--	--

and two horses - -	0	2	6
--------------------	---	---	---

To gentle harrowing before the			
--------------------------------	--	--	--

turnips are sown -	0	1	0
--------------------	---	---	---

To feed, rolling and sowing	0	1	6
-----------------------------	---	---	---

To forking up turnips, attend-			
--------------------------------	--	--	--

ing the sheep with hay, &c.	0	10	0
-----------------------------	---	----	---

To four hundred weight of hay	0	8	0
-------------------------------	---	---	---

To market expences, sale's-mas-			
---------------------------------	--	--	--

ter's allowance, &c. -	0	6	0
------------------------	---	---	---

To interest for six pounds, being			
-----------------------------------	--	--	--

the first cost of the ten sheep,			
----------------------------------	--	--	--

	1	9	0
--	---	---	---

Brought over	-	1	9	0
and lying out of it about half				
a year	-	0	3	0
Total expence		1	12	0
Clear profit		4	8	0

Note. The money is made of these crops in 36 months, three crops, the profit of which being added together, makes in all, clear profit 13 15 2

A fine thing indeed, and still nothing but what might be reasonably expected, and may chance to be a great deal more; and what may encourage a reclainer yet more is, that while he is at work with his bog, he has no rent to pay for it.

And now that he has got these three crops, we may suppose the bog to be reduced to good land, and fit to receive a crop of corn, and sown with grafs-seeds

as directed, and there is scarce any doubt but it will bring meadow worth, at least, 30 s. an acre; there is no deceit in all this, for we see as plain as two and two makes four, that here is nothing but what the common course of things may bring about, if the farmer stick to the rules laid down under the head of reclaiming bog.

Then will not all this awaken him to that valuable and necessary piece of improvement, which will add fame to his memory, money to his pocket, and health and beauty to his country?

N. B. I forgot to tell the farmer, under the article of reclaiming bog, that when he has got it laid down with grass, he may then put what manure he pleases on it, but to chuse lime-stone gravel, or marl, which will turn it to shamrogs or fine grass, and the skin or sod will keep his manure from sinking; but if he lays it on whilst it is under tillage, in its loose open state, it will immediately sink below

the reach of the plow to turn up, or any plant to feed upon, therefore he will infallibly lose it to all intents and purposes.

C H A P. XXVIII.

On reclaiming Mountain or Commons.

THERE are several sorts of land that goes by the name of mountain, though in the strictest sense, mountain is an eminence or a hill; and most hills are barren, heathy, or bad land; from this, I suppose, heathy land has derived the general name of mountain in Ireland, tho' the land be level.

In England, indeed, we have few mountains, though a great deal of heathy or lingy commons, which has nearly the same surface as the Irish mountains, but the under-stratum, in most places, is quite different: the Scotch mountains are much like the Irish in every degree.

In Ireland, the under-stratum is generally a hard, solid, binding gravel; but in England, the under-stratum is a free, black or red sand, which makes it easy to work in: the upper surface is nearly like

it, of a black, open, light, loose, fuzy, boggy sort of earth, on which grows heath or ling.

In England, it is pared thin in fods, and made use of for firing; it is also made use of in some parts of Ireland, particularly in the county of Wicklow, and in Scotland, for the same purpose.

In England, there are large tracts of this heathy-land, and one that does not know the constitution of the country, might brand the inhabitants thereof with indolence and ignorance, because they do not improve them; but however, here they are not blame-worthy, as no man dare inclose a single perch without an act of parliament empowering him so to do, as the lands are all common, no man can claim a separate part; this makes improvement so backward in England.

But however, they shew the difference, for when once an act is passed for the dividing and inclosing a piece of ground, a common or the like, suppose it be several thousand acres, it is seldom more

than a year or two, before it is improved, and made good land of.

I mention these particulars, to take off the aspersions that some of the Irish gentlemen have unthinkingly cast upon them, for letting their lands lie waste, not considering the restraint they lie under, and how hard it is to find a township of men in one mind, who will be at the expence and trouble, to get an act of parliament to inclose and divide said lands.

But this is not the case in Ireland, as every man has his land to himself, therefore if he does not improve it, he has not that excuse to make.

This is the state of the case with mountain, between England and Ireland; but in Ireland, mountains vary greatly; in some the black soil that covers the gravel, is deep enough to admit a sod to be pared and burned for to raise ashes; when this is the case, there cannot be a better and cheaper improvement; and this is like killing two birds with one stone, as the phrase is, because the fire destroys at

once the heath, rubbish and wild nature of the boggy part thereof, and converts them into a friendly manure.

The best and most suitable crops for such deep mountain as this, are rape, cole-seed or turnips, and treated much in the same way as you would bog; but indeed, it will never be so good for meadow; therefore it is best to lay it down with common grass-seeds and clover, or common grass-seeds alone, and keep it for grazing. After it has layed a year, if you have lime-stone gravel, (as there are few mountains in Ireland without, except in the county of Cork) lay it on, at the rate of two car loads to a square perch, and this will turn it to shamrogs or fine grass: but do not lay it on before the roots of the grass are well established.

There is another sort of mountain, which is very thin of soil, therefore if it was burned, you would destroy it to all intents and purposes.

This sort is called green mountain; it is covered with a short, poor spreading

heath, intermixed with moss and a coarse grass.

The only way to improve this is by fallow; begin to plow it for that purpose about Michaelmas, and let it lie exposed to the inclemency of the winter, by which the frost will kill the roots, and the sod will rot: about April harrow it well, and then give it eight or ten plowings before wheat-feed-time; then you may sow it with wheat, and there will be no doubt of a good crop, without any sort of manure. I. once produced as good wheat from a very poor mountain, as could grow; and I am clear, it will never fail of answering the expectation, if the farmer plow well, and stick close to this rule.

He may convert this sort of mountain to the rule of tillage which I have laid down in the 71 acres farm, as this strong mountain will answer best to be kept in tillage.

And can a man turn his land to better account, or a greater advantage, as appears by the table on wheat, in said farm?

certainly no; and if he be not stupidly blind to his own interest, he will not delay putting it in practice in good earnest, without loss of time, after he reads this book.

Suppose he was to work one part of his mountain with the bullocks he is rearing on the other part from three 'till they were five years old; in this case, he would have no loss in reclaiming such land but two men to each team, one to hold the plow, and the other to drive the bullocks, which by moderate exercise, would grow and thrive as well as if idle; and the only way would be to have fresh bullocks twice on a day, viz. forenoon and afternoon.

C H A P. XXIX.

A cure for wet and cold land, by laying it in broad high ridges, &c.

ONE of the greatest misfortunes that can attend a crop in Ireland, Scotland, and the north of England, is too much wet; this sometimes happens from the particularity of a season, but much oftener from the nature of the land; but from both these a farmer may guard himself.

It may be asked indeed, can a farmer cause sun-shine, or call down rain? It is true he cannot, nor do I expect impossibilities of him, but there is nothing more easy than for him to guard against this general evil; for though he cannot prevent rain, yet he may effectually prevent his land or crop from being hurt or damaged by it, if he lay his land in high ridges, as will be hereafter described; because when land lies in such a position,

it is impossible for water to stand thereon ten minutes before it tumbles into the furrows, and the furrows immediately convey it into the drains: and by a farmer keeping his land thus dry, it consequently adds to its heat, nourishment, and fertility.

And as to his crop suffering by wet, the general case is, because he is not beforehand with the season, so as to have his crop or harvest early, before the days grow short, and weather bad or broken.

One great article in fertilizing land, is by breaking and dividing it into small particles; whether this be done mechanically by the plow, manure, or laying it dry and warm, so as to cause a fermentation, it matters not; but essential it is ('tis very plain) to break and divide the soil into small particles, for the free growth of plants, because it gives the roots a free passage to search for nourishment, and it is from the smallest particles of this matter, that they are nourished.

Laying cold, wet, strong clay-land in

these high ridges, is the best method a farmer can devise, to cause a fermentation, and to make his land warm, free, open and mellow: strong, heavy, sour, cold clay land, chiefly wants to be laid thus dry, and often plowed, to make it a very fertile soil.

Whereas, on the other hand, while it lies in its flat wet state, (as I see it mostly does all over Ireland, and a great many parts of England) it is rendered more than half useless; for in this condition its chief crop or produce, is moss, rushes, and a bad, coarse, three-edged grass, by some called spear-grass; indeed it perishes every kind of sweet herbage, none such will grow on it, on account of its cold close nature, and retaining the water amongst it; this is the evil that attends a strong clay surface; but there is still a worse sort of land than this, and that is, when the surface or upper-stratum, for four or five inches deep, is of a loose, open, black earth, inclined to moor or bog, or of a loose sand, and under that a bed of clay

or close earth, which will not admit any water to enter it.

Such land I say, is worse than a clay surface; for this upper-stratum being loose and open, it immediately admits the rain to enter, which sinks 'till it comes at the under-stratum, or bed of clay, but can get no farther, so lodges between the two strata at the roots of the grass or corn, &c. which consequently perishes any plant that is of a tenderer nature than rushes, moss, spear-grass, or heath; this is the consequence with more than one half of all the lands in Ireland, as well as some parts of England, but more abundantly on the north or north-west side of Dublin; the most of such land lies on eminences or hills, which situation, one that does not understand it, might imagine to be dry, but it is very deceitful, though nothing is more easy accounted for, and cured too.

How can that be? says my reader, perhaps, and also say a great many that have answered me by word of mouth; does not

our land lie in hills; has it not a descent or speed enough for water? does it not already represent a ridge, having as great a fall? do we not lay our lands in ridges too? &c. All these suggestions will prompt such farmers to give a ready answer, tho' perhaps not a truly digested one.

My variable answers to the questions that have been asked me, through the many parts of the two kingdoms that I have travelled, concerning wet land, &c. were in general as above, and my advice was to lay it in broad high ridges; but as such variable directions might slip the memory, I am glad to have here an opportunity to give a more lasting memorandum, which may always be the farmer's guide upon recourse thereto.

Above, my reader has the real cause of wet land, with its ill consequences of perishing the plants, encouraging moss, rushes, &c. but if he lay his land in high ridges, as the following lines will direct, he may depend upon a real cure for all these his grievances.

Some farmers have no idea or notion of what we call sole of ground, or by some called under-stratum; this lies next the corn-mould, under the sole of the plow, at about four or five inches deep.

This ought to be nicely inspected into, upon all occasions, and for several reasons, as it is upon the goodness or badness of the sole that the farmer's success in his crop, in a great measure depends: as also, the sole ought to be his guide, how to vary his crop, or management; neither can any man be a true judge in land, if he do not make himself truly acquainted with the under-stratum.

I think I could, upon entering into any country or field, without digging, give a near guess what sort of a sole or earth lay under as a second stratum.

The sole or under-stratum of lands in the three kingdoms vary greatly, and particular regard ought to be had to the following sorts, viz.

First, clay; which keeps out the water, and causes a wet surface, the water swimming above ground.

Secondly, a red fox-sand, which loses the manure, as it is of a dry, open, loose nature; (such land will bear lying flat) and ought never to be manured, but on the grafs; as the sod will hold it up, so consequently the benefit of the manure will be the greater, as it will drain thro' the roots of the grafs, and be longer before it get out of the reach of the plow to turn it up again.

Thirdly, a spewing, loose, running earth, between a loam and a sand; which is always wet and cold; it is generally about a foot thick, and under it lies a bed of clay, perhaps four or five feet deep; in some places it has a firm thin shell of solid earth, between it and the corn-mould: this is a very bad sort to build, or make ditches upon, as they seldom stand long, for it gives way, runs, and lets them fall; this also should not be manured, but on the grafs or surface, by top-dressings, as the manure would sink, run off and be lost immediately.

Fourthly, a firm red, hard calised rusty

earth, which will neither melt with rain or frost; this is a very bad dangerous sort, and is very productive of weeds: a farmer ought to be afraid of disturbing it with the plow, though it lies in some places, within three inches of the surface.

Fifthly, a lime-stone gravel; this is a good sort, where it lies near the surface, the plow may turn it up to the benefit of the land, as it is a rich manure, and by mixing it with the upper-stratum, improves the land; however, this is rare to be met with.

Sixthly, hard road gravel; this lies generally on mountains, under black heathy or moory soil, and lies near the surface, when there is not sufficient of corn-mould; it may be turned up with safety, and indeed advantage, as there are no bad consequences attending it, but poverty, which will be helped by mixing among the upper surface; it will also bring the upper surface to a better consistency, which before was too light and fuzzy; this gravel sole is generally very hard to plow;

it makes good roads. In Ireland it is very plentiful, being under most of the high heathy lands in the kingdom; which is the reason that their roads are so generally good, having only the sod to strip and the road is made; but in England, it is very scarce, except on the wolds.

The above six sorts are the under-stratum.

Now we see through all these various sorts of land, and not one of them will bear to be laid flat, except the second and the last, which are both of a sandy nature; all the rest must be raised in ridges, so as to give the sole as well as the surface a proper sheed, and this is impossible to be done by any other or better method, than by gathering or taking up the ridges three or four times together as need requires.

The method to raise high ridges, is to begin every plowing at the middle of the ridge, and turn the right hand about 'till you raise them as high as you intend; harrow across between each plowing, and

it will give the ridge a more agreeable round in the middle.

This is apt to strip the furrow of the rich and best soil; to remedy which, throw a little more manure on the furrows than common, the first and second year.

Being thus got into form, never alter them after, but alternately take them up one time, and put them down another.

I do not remember ever to have seen in Ireland, a ridge taken up above once together, consequently the sole or stratum under their ridges is flat or level, having no sheed for water, and though the surface of their ridge looks dry, yet the wet lies upon the sole at the roots of their crop.

Now suppose we were to strip the upper surface from one of those high ridges, we should find the same sheed for water under, as it had at top. In this case, there can be no rest for water there; but were the like done by a ridge only once taken up, the under sole would be level, so consequently would detain the water the same as it were on a flat floor.

If the nature or situation of the land will admit, lay the ends of your ridges east and west; and when on hills, never let them run straight up and down, or yet quite across, but a little diagonally; there are two ways for the water that falls upon a hill to run off; the one is on the surface; and the other between the upper and under stratum or bed of clay; but when the upper stratum is loose and open, if it be on ever so steep a hill, it seldom runs off without entering it, except after a sharp shower of rain, and even in this case, there is not much of it gets to the bottom of the hill, but sinks through the loose surface to the understratum, or bed of clay; and when it gets there, its motion is very slow, as it has to drain through the loose earth, insomuch, that before it arrives at the bottom of the hill, perhaps more rain falls, which keeps it perpetually wet, and in mortar.

Now the improver's art must be, to make the run or course of all waters as short as possible, before it comes into a

drain; and this is effected best by laying it ridge-ways; for, suppose the ridge be thirty feet broad, the top of a ridge is within fifteen feet of a drain or furrow, as there is one at each side of the ridge; but though the run of water from the top of the ridge into the furrow, is only fifteen feet, yet a great deal will sink till it comes to the under-stratum or clay, because that direction is perpendicular, and it has only five or six inches to go; this is all as certain as that a man's coat will be wet through, which is not above five or six feet long, and hangs perpendicular.

By this the farmer sees how necessary it is to give the under-stratum a sheed also, that the subterraneous water may have a short passage into its furrow; every time the land is taken up or gathered, the plow touches the clay, it makes a furrow deeper and deeper therein; thus every furrow is a drain to the ridge it belongs, and the water will find the shortest road into it; but you must always be circumspect, that

you give the side of the ridge both upper and under stratum a greater slope or sheed, than there is in the side of the hill, lest the water run down the ridge, instead of turning into the furrow, as it certainly will follow the greatest declivity; it is for this reason I have ordered the ridges to be made a little obliquely, and this obliquity or slanting should be more or less, according to the form or declivity of the hill.

These are easy and plain directions, and the success of them is not doubtful but certain, and vouched by experience; and yet a great deal of land that might be made fruitful, is left to produce little or nothing.

Moreover, the farmer has a great increase in the quantity of the surface of his ground; it is certain, the surface of a field measures more in quantity when in ridges than when flat, and it is equally certain, that all its surface is capable of bearing corn.

The success and quantity of a crop does

not depend upon the space there is for the corn to stand in, but on the quantity of earth there is for its roots to spread in, in search of its nourishment.

This is a short state of the case, no sophistry can get the better of so plain a fact; and it is upon all these evident advantages that I recommend the farmer to lay his cold, wet, strong land in ridges, &c.

C H A P. XXX.

Directions for Burn-beating in general.

WE may consider burn-beating in two lights, namely, one for the improvement, and the other for the destruction of ground.

As for instance, he that pares and burns a piece of grassy-land of any sort whatever, robs it of a great deal of its rich sulphurous qualities, by sending into the clouds the best and richest nourishment or manure; and also reduces the corn-mould to too thin a staple or shell, for the corn to grow on, particularly if it be not of a natural deep soil aforetime.

But however, if it be ever so deep, it certainly weakens the land and spoils it in comparison of what it would be, were such land fallowed, and said grass and roots killed, and brought to a putrefaction by tillage; for then it is permitted to retain all its substance, and the same be-

ing mixed, mingled or interspersed amongst the mould or earth, the said putrefaction brings on a fermentation, and by the working of the two spirits, they divide and open the particles thereof, and bring stubborn, strong, clayey earth to a friendly, good, mellow substance: besides, if the grass be killed by tillage or fallow, every time the furrow is turned up, the air is helping, aiding and assisting to enrich it.

If the farmer duly consider the force of this argument, and how essential it is to retain the sulphurs and richness of the ground, instead of sending them by fire and smoak into the clouds, he certainly would not destroy such fine thin skinned land, as I have frequently seen done thro' Ireland, and in many parts of England, by burning, which is a vile custom, and a destruction to such land.

It is true, he may get one good crop or two, but after that it will be so much spent that it will be hard to recover it, without great loss of time, money and manure.

Now, though my reader sees how detrimental burn-beating is to such grass-land, yet in an opposite case, it may be done with great advantage to the land and its owner.

That is when the land is deep, wild, coarse, rushy, heathy, boggy, or mountainy; in this case it is in its wild state, as nature found it so it is; when such land is over-run with heath and rushes, it must be burned to destroy the wild nature thereof, and convert these enemies to a friendly manure, which is almost impossible to be done by fallow, as their roots penetrate so deep, and incorporate so strongly with the earth. Their vegetating or growing quality and substance cannot be effectually stopped, killed and routed in the course of one year's fallow; therefore I say it is better to reduce such stubborn enemies by fire, than to wait too long a time for them to be rotten, and tore, or shaken to pieces by tillage.

By the foregoing observations, it is ea-

fy for a farmer to judge which sort of land to burn, and which to fallow.

Mostly all over Ireland, Scotland, and the north of England, the land is given to wet, so consequently to rushes, which thrive best on such land, as it is their natural soil.

Now what a farmer should do with such like land is this, viz.

Plow it with a good stout furrow, about four inches thick, and eight broad; and when he comes at a tuft of rushes, if he finds the said four inches will not go under the roots, order the plowman to give a dip with his plow 'till he gets under them.

This is easy done, because the roots do not spread horizontally, much farther under ground than the tops do above, but they generally strike perpendicular to a good depth; and it is necessary to root them out from the bottom; and they are bound in such a matrafs that it is not easy to part them.

When the land is thus plowed, the fine

part thereof must be treated in every degree as a good fallow; plow it if possible ten or twelve times.

And in the course of the summer-fallow, burn the roots of the rushes, which is no hard matter to do, they having so much root, matted, wove or intermixed with the fod, therefore will both burn well, and produce a great deal of ashes, which together with the fallow, will sweeten, and give the soil such a dressing, that it will almost retain it for ever, particularly if it be laid in high ridges, as directed under the head for wet land.

Directions for Burn-beating.

When the farmer has fixed upon the land for burning, he must first cut it across with cutting knives fixed in a roller, as directed in this work; or for want of this, take a sharp coulter, and fix it in an old plow without a sock, let the coulter sink as deep below the sole of the plow as you intend to pare the fod thick; with

this go cross-ways off the land, and cut each score within two feet of each other, that when it is plowed, it may turn up in fods that length.

If the season be dry, they will burn without setting up; but if wet, they must be set on an edge, two together, propping against each other; and when in burning order, gather them in heaps, about a cart-load in each, and set them on fire with some sort of kindling, such as firs, or whins, turf, &c. and all the time it is burning, men must attend, in order to keep laying fods on where the blaze breaks out; as the judgment of burning is to keep or retain as much of the salts or nitre within the ashes as possible, and this is done by keeping the blaze smothering within, for the more it breaks out, the more of the smoak and sulphur ascends the clouds.

When thus burned, there is no more to do than spread the ashes even, and then plow the ground thin, so as not to bury the ashes too deep, and so sow it

with rape, turnips, or what you please: and after sowing, harrow it lightly, or as is ordered under the direction of any crop you chuse to sow in this burned-land, but nothing is equal to rape or turnips; indeed it will bring a good crop of potatoes if managed in the Irish method.

C H A P. XXXI.

Remarks on Burn-beating in general.

AS I observed in the foregoing chapter, burn-beating is only to be used for one sort of land, namely, rushy, heathy, wild and unimproved bog, and deep mountain, to such it is a great improver.

In the first place, it completely clears the ground of weeds, rushes, heath, or rubbish of all sorts.

Secondly, it converts these very enemies to a friendly manure of the richest kind, for the production of crops, to which, before, they were mortally averse.

Thirdly, the burning the sod, on the ground, warms it, by which means the earth is set a working, and brought to a separation; so that the salt or nitre thereof has a free communication to the roots, and the ground is nourished and sweetened.

Such burnt land will bring two, or perhaps three plentiful crops.

Indeed nature will not stop, till she has exhausted herself of her virtue to such a degree, that one kind of manure will scarce relieve it; when this happens there must be a mixture made use of, of two or three sorts, by the way of a compost, in order to set their different spirits a working together, by which it will the sooner incorporate with this worn out soil, and make it answer for a crop, and particularly turnips, which is the best crop that can be sown on such spent land, to bring it into heart again, by eating them on the ground, and the year following sow it with barley or oats, and clover.

Were my brother farmers to suit this burnt-land with proper crops, there would not be so much danger of impoverishing or running it out; and this they may do, with great profit to themselves, and advantage to the land; it is a prevalent opinion amongst good farmers, and I think reason backs it, that burnt land should

never be sown with more than three crops before it is laid down.

The first rape or cole-feed. The second turnips. The third and last barley, and laid down with clover.

These are three very profitable crops, and the two first are great improvers, and so is the clover.

These crops I am certain, add strength and vigour to the land, particularly if the turnips be eaten thereon.

But were the said land sown with three crops of corn successively, it would ruin it to all intents and purposes; insomuch, that it would hardly leave it recoverable; and yet the first mentioned crops are by much the greatest profit to the proprietor.

If so, there certainly can be no other reason for a farmer's spoiling his land, than a positive ignorance.

A judicious farmer will avoid raising corn from burnt land, as it does not sell high, having a coarse thick skin, and will not yield well in flour, therefore is generally lower in price.

But indeed, the Irish farmers are not over and above delicate in regard to their grain, either in chusing plump or thin-skinn'd corn for seed, or in winnowing it clean, which is a very material point to the look of corn for sale.

Let corn be ever so good, if it be not well cleaned, and the light corn tailed out, it will not be fair to the eye: but on the other hand, though the grain should be but indifferent, if it be well handled it greatly helps it both in look and real value.

I have known Ireland many years, and have seen some hundreds of people winnow, but never saw one yet go in a handy right way about it, except at a gentleman's house, where they have been directed by English stewards, and very seldom in this case, for except a man be endued with the patience of Job, to persevere in the task of his directions, he must be tired out; for many of the common people are like a head strong mule (pardon the expression) that will neither lead

nor be driven out of their old road.

Indeed I have taught several of these obstinate sons of Adam, to follow the English method, in several branches of husbandry, yet I never could get any thing rightly executed by verbal directions; my method is always to stand by 'till I get a pattern done to my mind, tho' it should be done and undone several times, before it can be brought to bear.

But indeed, I generally set a pattern with my own hands, and then see that they repeat it; for I conceive that it saves much trouble to ground a learner thoroughly in the beginning, also to use persuasive arguments with a mixture of good-natured authority. By these, and such like methods, I think I could get any design tolerably well executed.

But indeed, a good deal depends on a farmer's being a judge, and a handy man himself. It is true, he may go into the field amongst his men, and see his horses badly harnessed, and his plow-man make bad work, and tell him so; but what does

It avail, if neither master nor man can set matters to rights.

He is the right farmer and master of his business, who can right every thing that is wrong with his own hands.

No man ought to think himself above doing this; particularly if he pretend to instruct others at all. It is no shame to any one to be useful and ingenious, let his station in life be what it will.

C H A P. XXXII.

Remarks on the folly of burning Stubble (recommended by some Authors.)

I Have omitted in my receipts of farming, a custom used in some places, by farmers burning the stubble on the ground, which is called *bastard burn-beating*.

But I did not chuse to take notice of it, as I take it to be a bad piece of management, and which ought to be condemned by every thinking person. I am therefore the more surprized to see it recommended by several writers on husbandry.

Such authors should consider that stubble is not like rushes, heath, or weeds of any kind, that are noxious in their nature, and whose destruction is of benefit, independent of the manure, into which they are converted, and which they yield in large and rich quantities by means of their

The Capital, or total Expence to stock a Farm of 150 Acres, with the Expence of the first Cost of 300 Sheep to feed with Turnips, and not to and Bullocks until three Years old. This adds the Capital in this Table 233 l. more than in the other capital Table.

	6 Cows in Calf at 4 l. each	6 one year old Calves at 2 l. each	6 two year old Bullocks at 3 l. each	6 three year old Bullocks at 3 l. 10 s.	8 Mares at 10 l. each	4 one year old Foles at 3 l. each	4 two year old Colts at 6 l. each	4 three year old Colts at 8 l. each	2 Sows with 8 Pigs each, at 3 l. each Sow	10 Hogs at half 4 year old at 10 s.	2 Carts at 8 l. each	4 Plows at 2 l. each	4 Pair of Harrows at 1 l. each	8 Sett of Geers at 15 s.	300 Sheep fed on Turnips at 12 s. per	20 Sheep for family use at 10 s. each	Total Expence or first Capital	Number of Cattle that live on Grafs
O	1. 24	1. 12	1. 18	1. 21	1. 80	1. 12	1. 24	1. 32	1. 6	1. 5	1. 16	1. 8	1. 4	1. 6	1. 180	1. 10	1. 458	
P	6	6	6	6	8	4	4	4	0	0	0	0	0	0	0	20	0	64
Q	6	2	4	6	8	1 1/4	2 1/2	4	0	0	0	0	0	0	0	4	0	0

EXPLANATION.

The parallel Lines between O and R, and in each Column, you see the total Expence of each different Stock, &c. which is toted up and placed near R. In the next parallel Line between H and P, and in each Column you see the number of each different Stock, which all being added up makes 64, placed near H. The parallel Line between Q and M, and in each Column you see how many Foot of each Sort of Cattle: and near M is placed 38.

The Total Stock and Capital required for a Farm of 150 Acres. Note I have lowered the Capital 233 l. in this Table, which is the Cost of three Year old Horses, and 6 three Year old Bullocks, as he may do without them the first Year; as to the 300 Sheep for Turnips, the Farmer has the Money on his Farm before he wants to buy them.

	6 Cows in Calf at 4 l. each	6 one year old Calves at 2 l. each	6 two year old Bullocks at 3 l. each	8 Mares at 10 l. each	4 one year old Foles at 3 l. each	4 two year old Colts at 6 l. each	2 Sows with 8 Pigs at 3 l. each Sow	10 half year old Hogs at 10 s. each	2 Carts at 8 l. per	4 Plows at 2 l. each	4 Pair of Harrows at 1 l. each	8 Sett of Geers at 15 s. each	20 Sheep at 10 s. each	Total of the capital Expence	Number of Cattle that live upon Grafs	Number of Bull or Foot of Cattle allowing one 1 Year old, and one 2 Year old to eat as much Grafs as an aged Horse or Cow, five Sheep will eat as much as one Bull or Foot of Cattle.	
Y	1. 24	1. 12	1. 18	1. 80	1. 12	1. 24	1. 6	1. 5	1. 16	1. 8	1. 4	1. 6	1. 10	1. 225			W
X	6	6	6	8	4	4	0	0	0	0	0	0	20		54		Z
S	6	2	4	8	1 1/4	2 1/2	0	0	0	0	0	0	4			28	T

EXPLANATION.

In the parallel Line between Y and W, and in each Column, you see the Expence of every different Stock and Utensil, the total Expence being added up, and placed at the End of said Line next W. The parallel Line between X and Z, and in each Column, you see the Number of each different Stock, which all being added up and placed in the Line next Z, and appears to be 54. The parallel Line between S and T, and in each Column, you see how many Foot of each Sort of Cattle, which is added up, and placed in the Line next T, which is 28 Foot; one 2 Year old, and one 1 Year old, makes in Part one Foot, that is, they are supposed to eat as much Grafs as an aged Horse or Cow, five Sheep will eat as much as one Bull or Foot of Cattle.

Different Quantities of Seed sown on an Acre, as expressed in each Column, for Drill and Broadcast Husbandry.

Profit Capital	63
Number of Cattle that live on Grafs	64
Total Number of Sum or Foot that live on Grafs	38
	M
	H
	R

up and placed near R.
up makes 64 l. which is
placed 38.

the Cost of 300 Sheep, 4
os, the Farmer may make

W	
Z	
T	

xpence being 225 l. ad-
 of each different Stock
 how many Foot or Ball
 kes in Point of Grazing

Different Sorts of Seed.		The Author's Quantity	The Irish Farmer's Quantity	English Farmer's Quantity	Drill Husbandry
	lb	lb	lb	lb	lb
Clover	10	15	12	0	
Lucerne	6	10	8	$1\frac{1}{2}$	
Burnet	12	12	12	3	
Turnips	1	2	$1\frac{1}{2}$	3oz	

It is my opinion, that tho' I sow thinner than most English Farmers, yet I throw one Half of my Seed away; particularly Wheat, Barley, Oats, Beans, Peas and Rape. Indeed, I have not ventured to sow any large Quantity of Land with less than I have set down, except in the new Method with the planting Machine. Note, opposite each Crop that is not proper to be sown in Drill-Husbandry, I have left a Blank.

Capital and Stock necessary for a 35 Acres Farm.

2 Cows at 4l. each	1. 8	2	2
2 one year old Calves at 2l. each	1. 4	2	2
2 two year old Bulls at 3l. 10s. each	1. 7	2	1 1/2
2 Mares at 6l. each	1. 12	2	2
1 one year old Colt at 2l. 10s.	2l. 10s.	1	2
1 two year old Colt at 5l.	1. 5	1	1 1/2
5 Ewes at 8s. each	1. 2	5	1
2 Hogs at 10s. each	1. 1	0	0
2 Cars at 2l. each	1. 4	0	0
1 Plow at 1l. 15s.	1l. 15s.	0	0
1 Pair of Harrows at 1l.	1. 1	0	0
2 Sett of Geers at 15s.	1l. 10s.	15	7
Total Capital	39l. 15s.	No Cattle	No Foot

substance and verdure, being intermixed with salts, oils, and sulphurs. But this is very far from being the case with stubble, it is half dung already, and in no danger of growing, or becoming a troublesome weed.

As it is light and dry, fire instantly dissipates its contents into air; and with respect to the warmth that the blaze may communicate to the ground, it has neither the intenseness nor virtue of a single hour of a summer's day.

But if the stubble or straw was plowed in, and particularly when the corn was newly cut, the straw or stubble at that time being more impregnated with salts, it would rot and yield all the substance that it has in manure.

A monthly Calendar, or Memorandum of works to be done as they come in season round the year; so that lest a farmer may forget himself, let him look for the month he is then in, and he will see what works ought to be going forward. The Reader is desired to take notice, that the intent of this Calendar is to remind him of the work, but as to the management, he must turn to the chapter of the work he would do, for directions thereon.

J A N U A R Y.

IN the beginning of this month, plow the fallows that missed plowing in autumn.

Plow for beans and peas; take the ridges up to lie dry; toward the latter end of the month sow them, if the weather permits.

Until this time, eat the clover with sheep, or light cattle, so as not to tread it, but know it must be laid up to get a head against spring, for early lambs, &c. or meadow.

Flood your marshy low land, or any other whereon you can turn water. In order to this, take in the water out of any river or drain, at the highest part of the field; convey it first along the head of said field by a small surface, gripe, or drain, about a foot wide, and the same deep; at about every ten yards distance, cut with a plow, a furrow sloping-ways of the hill, so that when the furrows are full, the water will flow over at the lowest side; this is easy done, as there are few fields but what one side is higher than another.

If the weather be frosty, carry out dung; leave it in heaps, ready for spreading when the frost is gone.

Lop, top and plant forest trees of all sorts, plant quicksets, and make and repair your ditches, clear your water-courses.

Kill and save bacon, hang-beef, and hams.

At this time, and from Michaelmas, is a good time to repair quickset hedges, by laying the thorns down in gaps, or open

places where the fence is thin at the bottom, nick the thorns two-thirds of the way through, in order to make them bend and lie easy, by which they will be surer to grow than if they were bent without nicking, which would bruise and wound the wood, and prevent the sap from rising past the bruised place; whereas, if it was cut as thin as half a crown, provided the uncut wood bent easy, without bruising, the sap would circulate through the narrow uncut place to the branch, which would flourish and spread along the bottom of the hedge, and make a good fence.

This in England, is called splashing. The labourers in Yorkshire, and Lincolnshire are very expert at it; if the hedge be ever so ragged, and thin, provided the tops will meet, they will make a good fence, which the year after will almost turn a hare, when the young fibres shoot out.

But this piece of dexterity is not universal in England; and in Ireland I never

saw any of it; though few people in the world go to greater expence in planting quicks, and making ditches, &c. than the Irish.

Continue to break and swingle hemp and flax.

This is the best time to thresh out barley, as it is wanted for malting, and the straw, which is not quite so good as oat straw, will eat best in hard weather.

Early lambs are now dropping, turn the ewes to turnips, if you have any, which will fatten the lambs quickly; but if the weather be wet, and the ground soft, it will be too cold for the lambs; in this case, pull the turnips, and take them to the ewes on grass land, but have no regard in this case for wethers, as they will feed better on the ground where the turnips are fast at the root, which keeps them fresh and juicy, and from rolling about in the dirt as they scoop them.

Remember to throw roach-lime into the hole of the little-house, to prevent it from smelling, and to dry the dung so

as to make it spread when laid on the land.

Remember to send men to pick up the shells, or bottoms of the turnips, that they be clean eaten up, before you make a fresh break.

Remember your bees, and if weak, feed them with cakes made of malt-flour, mixed up with sweet wort, or a cake made of rye-meal, mixed with treacle-water, or give them brown sugar. Also turn up the hive, and sprinkle it well with sweet wort, or treacle-water.

Plow your barley-fallow for the second time, as I suppose it was plowed in autumn to turn the stubble under.

Towards the latter end of the month, if the weather be open, sow vetches, whether for seed, fodder, or feeding on the ground; but if for feeding on the ground, they would have been better sown in the latter end of the summer, as directed under that head.

House your weanling calves and foals, if not done sooner. Dress your meadows.

Cut and spread ant-hills, by which the ants being exposed at this severe season will be destroyed.

10 Look after your pidgeons, feed them and spread ashes on the pidgeon-house floor, to keep the dung from caking.

F E B R U A R Y.

SOW beans and peas, which ought to be done, if the weather permit, before oat-seed time.

Towards the latter end of the month, if the weather be open, sow oats.

The rye that missed sowing in autumn, must be sown at the beginning of the month.

Plow your barley-fallow, if not done last month; transplant rape-stalks.

Continue to splash quickset-hedges.

Lay up your meadows, clean them from all sticks, stones, and rubbish that may be obstructive to the scythe. Spread and break horse and cow dung, ant-hills and mole-hills, which are done in a cheap easy manner with a molding-sledge.

Look over your wheat land, lest any water stand by the stoppage of fods or stones falling into the furrows and gripes.

Set oziers, poplars, willows, and other aquatics, lop trees, plant quicks, open

half the passage of your bees, gripe and drain the wet lands, look that no water stand on your crop.

Your forward fat lambs will now begin to be ready for the market; do not keep them too long, for what they gain in size they lose in price, as the markets drop when the season advances; besides, if they are off early, the ewes may be fed on clover, and be ready for market early also.

Set potatoes, to come in early. Lay them first, and cover them well with long horse dung, to preserve them from the frost.

Continue to break and swingle hemp and flax, and peel winter-hemp.

Begin to beat the seed out of the flax and hemp.

The dew-rate flax must now be spread on the grafs: the snow, frost, and rain rates it well.

Remember to feed your bees, turn the hive up, and sprinkle the combs with sweet wort.

Continue to spread foot on your wheat, to kill the red worms, at the rate of five barrels to the Irish acre.

This is a good time to lay any sort of short dung on your wheat-land, such as ashes, pidgeon, rabbit, and hen dung; but do not lay lime on without mixing as directed, lest it burn the blades of the wheat.

You must not defer brewing your keeping-strong-beer any longer.

In the first week, or first fine open weather in this month, finish plowing for the last time, your winter-fallow or ground intended to receive the wheat-plants which were sown in autumn, and get them transplanted as quick as possible in the fresh mold, that they may keep a forehand with the weeds, in order to suppress them.

M A R C H.

THIS is a very busy month with the farmers, and it behoves every one to bestir himself, to get the proper crops into the ground in due season.

Plow for, and sow oats, if clover be to be sown among them. When the oats are harrowed well, sow the clover-feed, and bush-harrow it; but I take it to be the best way to defer sowing it till the oats are come up, then sow the feed and roll it in.

If the season be good (but not else) sow barley.

Sow mustard-feed; the ground, if stubble, must have two plowings, but it will grow with great success on lay-land if good, with once plowing; harrow it well before sowing, and after sowing roll it.

Lay up, dress, and roll your meadows.

Spread ant-hills. Lop and top trees. Plant quicksets; plant osiers, willows, and other aquatics.

The fat sheep must now be kept drawing off the turnips, as they now begin to grow near an end, and the markets advance much about this time.

You may yet sow vetches, tho' it were better done sooner.

Finish splashing quickset-hedges.

Turn your ewes and early lambs into clover or rye-grass, as the turnips are near an end.

Widen the passage for your bees, and continue to feed them if required. Turn up the hives gently, and sprinkle the combs with sweet wort.

Geld your year-old foals, take care to rub their thighs, and over their kidneys with marsh-mallows.

Set the tails of your young horses. It is also a good time to break them.

The calves that drop now, ought to be kept for rearing, but as milk is at this time scarce, a good drink may be made by boiling hay till the water is very strong, into which put for every three calves, and so in proportion, a pint of flax-feed, a pint

of oat-meal, and a quart of skim-milk; put the flax-seed in along with the hay, and boil it all the time; it will be smooth and like a jelly, put the oat-meal and milk in when the hay is taken out, after which give it a good boil.

There is no finer feeding for calves than this; it both strengthens and makes them grow large, and it is very cheap food to rear them with.

There are people in England who make a very comfortable living, by buying calves as soon as they drop, and rearing them thus: some give them nothing but flax-seed and hay-water, after they are a month old.

They can buy the flax-seed from the oil-mills, at about three shillings and sixpence a bushel, and a bushel will rear two calves by the above rule.

I have heard of farmers in Lincolnshire, rearing from sixty to a hundred calves in a year, by this method.

Put out dung for potatoes, and set them whether by plow or spade.

Sow flax-feed when the land is well harrowed.

Sow all sorts of artificial grasses, such as burnet, clover, rye-grass, white hay-feed, common hay-feed, timothy-grass, &c.

Sow beans and peas. Sow white-peas.

At the latter end of the month, if the weather be good, roll wheat, bear, and rye, but sow the grass-seeds first, if they be intended.

Sow broom and whin-seeds on the tops of ditches for shelter, but if it be a gravelly ground, they will not grow well; therefore make the drill deeper, in which throw a little good earth to sow the seeds in, this is easily done, and the crops are surer of success.

Clip young quicksets, to make them spread.

Water or rate the bunch-rate flax, if the water be clear of ice.

Turn your young cattle on to the bog or coarse mountain, which will eat better from this, till the latter end of May,

than any time of the year; and is of great use to save the fine pastures till they get a head, by which the grass retains the dew, and the sun is kept from the roots.

Plant potatoes, sow flax-seed amongst them at the rate of eight quarts to an acre, to raise for feed.

Finish killing your bacon-hogs this month, or making hang-beef or hams, as it will not do so well if done later.

Towards the latter end of the month, if the weather be good, sow barley, and grass-seeds after it is harrowed, and bush-harrow, or roll them in.

Spread foot on your green wheat. See receipt for red worms.

Sow burnet or vetches, to stand for feed.

Spread ashes, compost, pigeons or other short manures on your winter-crops.

Continue to plow your fallows.

Sow hemp and flax. Try your flax-seed first if it will grow. The quickest way to do this is to lap a little seed in a woollen

rag, and put it into a couch of malt; this will shew whether it has lost its growing quality or not, in two or three days.

A P R I L.

THIS is also a busy month with the farmers.

Sow buck-wheat, flax, hemp, lucerne, faintfoin, rye-grass, clover, and hay-seeds of all sorts.

Sow barley, which ought to be finished this month, though some will sow till the middle of May, but this is better avoided if possible; though indeed, it is better to wait a month, than sow in soft, dirty wet weather, as it is a tender grain.

About the middle of this month, turn sheep into clover, as the turnips are now done.

Finish rolling, stoning, and cleaning the meadows.

Destroy young rooks, and their nests, which is easily done, by small long poles, one spliced to another, with an iron crook fixed to one end, which will easily pull the nests down.

Plant quicksets and forest trees of all sorts.

This is a good time to give your mares to the stallion; make use of such a one as is broad and strong, short-jointed, moves light, and goes true on his legs, what is called half-blood, or in England chapman's horses; Ireland is ruined by following too much after blood, which are not fit for service, (on those hard roads) or the farmer's profit.

If time permit, in the latter end of the month begin to pare your land for burn-beating.

This is a good time to begin to dig, drain, and reclaim your bog, as directed. (See reclaiming bog.)

Clip your young quickset-hedges, to make them grow thick at the bottom by putting out fresh shoots or fibres.

Continue to keep your cattle on the bog and mountain, as the heath at this time is wholesome, sweet, and tender; and by doing this, you save your fine grass-pastures till they get a head.

Delay no longer to water or rate your bunch-rate flax, for in hot weather the

worms, both in water and on the grafs will damage it, if done much later.

Sow mustard-feed on stubble fallow, or lay-land.

In the beginning of the month, finish sowing oats, white-peas, and fitches, grey-peas, and mustard-feed.

Roll your corn of all sorts, delay no longer to lay up and dress your meadows, and roll them before the ground is hard, set the tails off, and break your young horses.

Keep your calves that drop now, for rearing; feed and make choice of such as are described in the calendar for March.

M A Y.

WE may now suppose most of the busy feed-time to be over; but if any of the latest crops, such as buck-wheat, barley, and sundry sorts of grass-seeds, and potatoes remain unsown, finish them as soon as possible.

Cross-harrow your fallows of all sorts, and plow them; after which blood your horses, and give them a fortnight's rest, being very necessary to refresh them, after their hard feed-time labour.

The first of this month, (old stile) break your summer pastures, bleed your horned cattle of all sorts, and give them a lick of tar, which will prevent diseases or catching distempers.

This is the time to buy in your in-calvers for milk: make choice of those with a fine, long, small, green horn, fine and clear of leather under the chops, and a good full shoulder, deep-chested, broad and well made behind, a straight broad

back, full hips, with short straight legs, a walk open and stately, a thick skin, and broad rib'd, with a good milk-vein and udder, and large tates; such dams are worth breeding, or rearing calves from, and their calves will cost no more keeping than such that are quite the reverse.

Were a farmer to bear in mind that a calf, when a year old, of the above beautiful shape, will bring from forty to fifty shillings, when one of the ill-favoured kind, (as Joseph called them) will not give, perhaps above ten or fifteen shillings, certainly he would be more nice in his breed, particularly when he considers that they both take the same keeping.

Were all farmers, or breeders to be so circumspect, what a beautiful brute creation we should have?

Give the breed-mares the horse, and as they are generally low in flesh, from their hard labour, they will be more apt to hold in foal.

Put your dung out, in dunghills, in

fallow fields where it is to be spread.

Continue to destroy moles, rooks, magpies, &c.

Look after your bees, which if strong, will now begin to swarm, and one swarm now will be worth two later in the season.

Continue to pare your land for burn-beating, and if the season be wet, the fods must be set upon an edge to dry.

Towards the latter end of the month, plow your fallows, that were cross-harrowed the beginning of the month.

Weed your wheat, and if too forward or rank, eat it with light cattle; such as calves, foals, or sheep.

Roll your wheat, and all sorts of grain, first sowing the grass-seeds intended.

Lay up your clover intended for hay, or seed: but if a crop of hay, and a crop of seed be required, it must not be eaten in spring (which if not) it will be ready to mow by the middle of this month, and then the seed crop will come in in good time, before short days and bad weather puts in.

Cut turf and provide your winter-firing of coals, &c.

You may yet continue to plant fir-trees without danger of success in growing.

Continue to geld your young colts, this being the safest month in the year, as the young grass purges them, and keeps them cool and open, therefore in less danger of swelling.

Do not forget to go on with reclaiming bog; throw it up in ridges, and burn the fods as directed. See bog.

Weed your quickset-hedges.

J U N E.

THE clover must not be eaten any longer (that is intended either for seed or hay) than the first of this month.

The forward clover's first crop will be now fit to mow; take it when it is very early in flower.

Continue to cut turf, and provide the winter-firing.

About the twenty-fourth of this month, the buck wheat, peas, or vetches will be ready to plow in for manure.

As near the twenty-fourth as possible, and when there is a prospect of rain, sow turnip-feed.

Weed hemp, flax and corn, early in the month, but it ought to be finished last month.

Look after your bees, which in hot weather will swarm and do well if early in this month, but the latter end is too late, if it could be helped.

Weed your quickset-hedges.

This is the time to burn your land intended for turnips, rape or cole-feed.

Wash and clip sheep, pare their nails, to prevent them from being lame.

Bleed your cattle, particularly poor cattle, when turned to feed.

About the twenty-ninth of this month, sow rape and cole-feed.

The beginning of this month, rye-grass will be ready to mow.

The latter end of the month, natural meadows will be ready to cut.

The rape and cole-feed will be ready to reap the beginning or middle of the month.

Look after your rank flax, and if it lodge, turn it as directed.

Burn lime for your fallows.

Hoe and weed potatoes, set with the plow or spades.

Plow and sow your rape and cole-feed stubbles with turnips.

Provide pits to rate flax in, and fill them with water, in order that it may be the

softer, which it will be the longer it stands, and the softer the water, the better. (See Remarks on flax.

J U L Y.

THE north of England and Ireland are now busy with their hay-harvest, but the south of England has got it over.

Continue to sow rape and cole-feed, which may be done with success to the last of the month, and it is better to wait a week or a fortnight for a prospect of rain than to sow in dry weather, for if the ground be very dry, a great part of it will not come up till rain falls.

The latter end of the month, turn bulls to your store heifers.

When the weeds or grass grows, your fallows must be plowed.

Towards the latter end of the month, early rye will be ripe, reap it.

Pull and rate female hemp, take care not to break the seed-hemp, when pulling the female.

Pull and rate your white-flax, beginning under the hedges, or where it lodges.

This is the best time to buy in store heifers for the bull, which will be got nearly as cheap now, as two months sooner; by which you will save the grass to get a good head, which will bear more stock.

AUGUST.

THIS is the harvest month for the north of England and Ireland, but in the south of England it is mostly over.

Reap and mow all sorts of corn, as it becomes ripe, but some will not be ripe till the next month, particularly what grows on cold wet land.

When you stack the corn in the haggard, between every layer or course of sheaves, throw fine sand, which will get into the ears of the mice and rats, and prevent them from destroying it.

As soon as the corn is off, plow for and sow turnips, burnet, or vetches, for winter-feeding, which will do the land good, and be a great help to fodder.

Remember to plow your fallows.

Pull and stack seed-flax as directed. See flax.

Fallow your flax-stubble, for wheat, which will be in fine tilth by Michaelmas with two plowings, and there will be no doubt of a good crop.

Turn rams to your ewes for early lambs.

Geld your lambs. Turn to feed such ewes as you intend for store.

Wean your lambs and runer calves.

Hoe or weed your turnips, and spread ashes on them, if you have them to spare.

Put your bulls to the store heifers.

The beginning of this month, buy in your store heifers for the bull; but take care they are not bulled before you buy them.

A sure token to know this is, if there be wax in the teats, that you can fetch out, by drawing them between the fingers.

Again, observe the barren, and if there be a drop hanging at it, which mostly gathers dirt, this is a sure sign she is bulled.

Plow your stubbles and sow fitches or burnet, as soon as the corn is off, for winter-feeding.

You may also sow turnips, tho' they will not be large, yet will be a great help to make fodder, as their tops will bear some eating. And, the farmer is to bear

in mind, that all winter crops, whose seed is cheap, is partly clear gain; and turnip-feed will not cost above fixpence, or a shilling an acre.

About the last of this month, sow your seed-wheat as directed in Chap. ii. vol. 2. in the new diagonal method of husbandry.

S E P T E M B E R.

CONTINUE to get in the harvest, which will be all ready this month.

The first of this month sow your wheat as directed in Chap. ii. vol. 2,

Pull your feed-hemp, and towards the latter end of the month, it will be dry, ready for threshing.

Turn the rams to your ewes, buy in half-thick sheep, and bullocks, for winter-feeding, turn them into your after-grass, and when it is eaten, turn them into the turnips.

Provide fence to pen on the turnips, either nets, sheep-bars, or faggots.

Plow stubbles for winter-fallows; take up or gather the ridges, that the land may lie dry.

Thresh seed-wheat towards the latter end of the month.

Sow fitches or burnet for winter-feeding; those that are sown for feeding, must be sown thicker than for a seed-crop.

Sow wheat, rye, and bear; take care to water-furrow and gripe the land, to keep it dry.

Wean your foals, and geld them.

Look after your bees, straighten the entrance into their hives, and destroy wasps or drones, or they will rob them of their honey. Drones are such as have lost their sting, after which they grow large and idle, will not find for themselves, but live on the other bees labour.

Put your hogs up to feed for pork, or bacon.

Clean or open your water-courses. In the north of England this is compell'd to be done by a water-jury, appointed for that purpose, who views all the drains, levies fines, and recovers damages for any one that is agrieved by reason of his neighbour's not scouring his drains, upon proper notice given.

Turn your hogs into the stubbles and woods to gather acorns.

Throw out musty straw to make dung.

Lay marl or lime-stone gravel on your

grass-land, and let it grow a year or two to the sod before you plow it, by which it will do the more service to the land, and will last longer. It is by no means proper to marl or gravel broken or fallow land, because the manure sinks, therefore any that falls to the bottom of the furrow will sink or descend too low for the plow to turn up. When it is laid on grass-land, the first time it is plowed must be very thin; and in fallow, take care that the marl lie at the top of the surface the last plowing.

O C T O B E R.

SOW wheat, rye, and bear; water-furrow and gripe as soon as sown.

Plow stubbles for winter fallow, but this must be only done in wet weather, or in such times as wheat-seed sowing cannot go on, because no time in this must be lost.

Plow up your potatoes that were set with the plow, and sow the land with wheat or bear.

Begin to splash quickset-hedges, and scour the ditch to lay at the root of the quicks.

Scour or clean all water-courses, to give the water when it comes, a ready passage.

Continue to sow fitches and burnet for winter-feeding.

Now is the time to take or drive your bees; but it is better to kill the bees in the hives you intend to take, than to run the hazard of losing two swarms, by driving,

which is often the case; for when two swarms are put to the allowance of what honey there is in one hive, that hive not having enough to support them all, they eat what there is, and then perish for want.

The way to drive them is to put the mouths of two hives together, and they will go into the upper one.

The way to kill them is to make a round hole in the ground, which will fit the mouth of the hive, in this, stick three bits of sticks, about six or eight inches, slit the upper end, in which fix three linen rags, dipped in brimstone, set them on fire, and over them put the mouth of the hive downwards, and stop it close round with fods, so that it will neither let smoke nor bees out; this will effectually kill all the bees.

Prune and plant all sorts of forest-trees and quicks.

The flax and hemp has by this got a sweat in the mow, begin to break and swing it out.

The last week in this month, transplant your wheat-plants sown in August or September, as directed in Chap. ii. vol. 2.

This is the time, before too much water comes, to make small surface and pipe drains, that they may be open, ready to take off the water when it comes.

The surface, drains, or gripes, are cut across meadow-grass, or corn-land; from every low place, to the ditches, or head-drains. They are made only wide enough for a spade to run at the bottom, to shovel the mould out.

How to make Pipe-drains.

Pipe drains are particularly useful to drain in lawns or meadows, lying opposite gentlemens houses, who for beauty's sake, would not have drains seen; and these answer the end of French drains. Pipe drains are made thus, viz.

Take a sharp spade, run it sloping down ten or twelve inches, then turn your face and spade another way, and cut another nick, sloping down opposite to the former;

let the sod at the top be about eight inches broad, and the spade going thus sloping down both ways, will meet at the bottom, therefore the sod will have a ridge or sharp angle, of which cut about three inches off, then drop the sod into its own place, by which there will be a tube or passage for water, about three inches triangular, which is sufficient to take any downfal of water off.

The sod dropping into the same place, forms (as it were) an arch; and if the ground be tolerable firm when it is made, a horse may tread on the sod and it will not sink. It is best to defer turning cattle into the land where such drains are made for three weeks or a month after, in order that the sod may grow together and be more solid.

You may cut these drains as near together as you please, or need requires, they are quickly and easy made, and there is no loss of ground, or any offence to the eye. It might be done on a bowling-green, or grass-plot; spread the little tri-

angular sod or mould you cut off, which will help to freshen the surface.

Streighten the passage for your bees, and take care that no mice or snails come at them, they being great enemies.

Kill wasps and drones, so pernicious to bees by eating their honey.

This is the time to brew your strong-bear for keeping for the ensuing summer's drinking.

And here let me advise the Irish farmers to copy after the English by brewing good bear or ale, and make that their drink instead of giving their money to the French for wine and spirits.

No man is to be pitied that cannot enjoy himself or his friend over a glass of good ale, the produce of his own land, and perhaps his own farm, therefore comes at a cheap rate.

On the other hand, he is very weak and greatly to be blamed, who is led away by pride, to ape the gentlemen of fortune, in treating with such costly li-

quors, when the produce of his own country, suits both his constitution and pocket better.

N O V E M B E R.

NOW is the time to finish plowing all your winter and ensuing summer fallows, whether stubble or lay-land, and then lay by your plows, and harrows dry 'till January.

Put up your hogs to feed for bacon.

Moss-harrow your lands, either summer-pasture or meadow.

Take up your cattle, and horses of all sorts; put cows into the house, and bullocks and other dry cattle into the barnyards to eat straw.

For the conveniency of which, make racks to stand on four feet, like sheep-racks seven feet long; this will hold a large arm-full of straw. To every two beasts have one of these racks, and disperse them about the yard, so as cattle may walk and eat round them.

Turn your sheep into the turnips, and confine them to what they will eat in a week.

Buy in small store pigs to turn into the barn-yard, to eat the loose corn that falls under the stand-racks, which will pay well by May.

Continue to sow wheat, rye, and bear.

Overflow your meadows.

Bleed your horses and fat cattle of all sorts.

Destroy ant-hills.

Move your bees under shelter, if they be not already in a bee-house.

Plant quicksets, scour your drains, splash quicksets, fell coppices, provide timber for carts and plows.

Fat your swine for slaughter.

Plant fruit and timber-trees, if the weather be open or clear of frost.

D E C E M B E R.

THIS is one of the farmers months of rest partly, not having much to do.

When the ground is clear of frost, mofs-harrow and roll meadows or grafs-ground of all sorts that want it.

Look after your fat sheep, and give them a little hay to clean their mouths from dirt, occasioned by their scooping the turnips out of the ground.

Pick up the turnip-shells with a fork, that the sheep may eat them clean before a fresh break is made.

Kill your bacon-hogs, and winters-beef.

Take care of your young foals, and instead of threshed oats, give them fine oat sheaves, which is better for them.

Turn cattle into your burnet or vetches that were sown for winter feeding if it be forward, but it is better to spare it 'till spring, when herbage is of more value.

Spread foot, or the compound of salt to kill the red-worms, and enrich the land. (See receipt.)

Look after your bees, and feed them, if they want it; feed your pigeons, spread ashes among their dung. Fell copses, and provide timber for house-boot, cart-boot, and plow-boot.

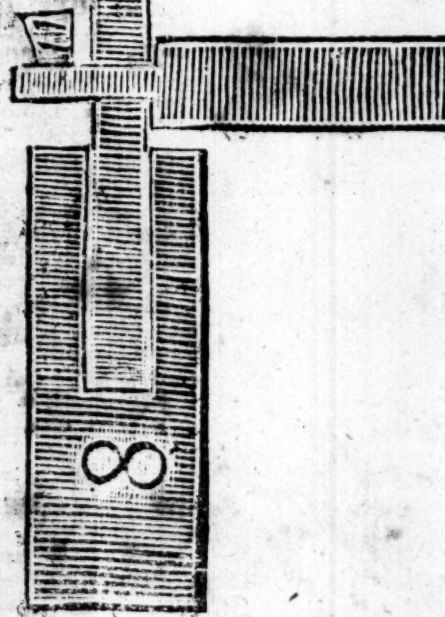
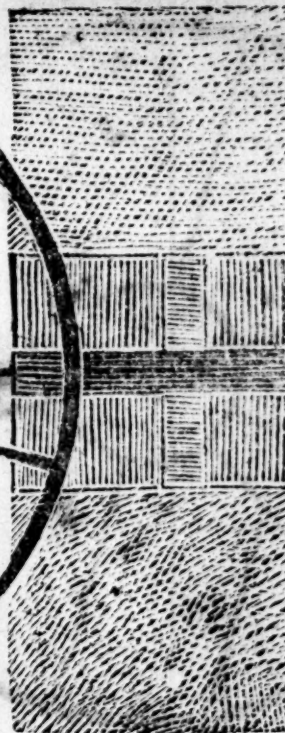
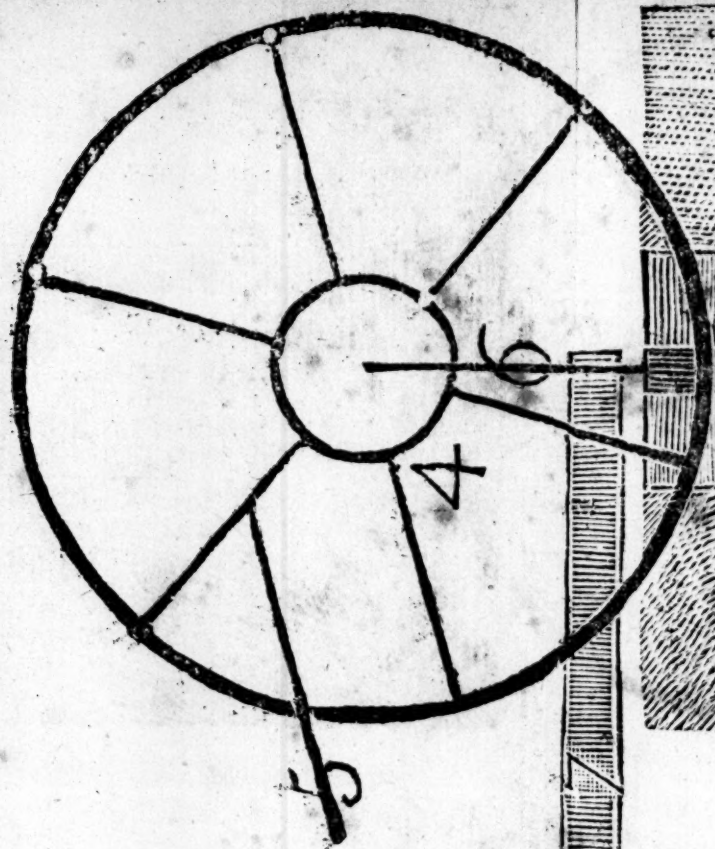
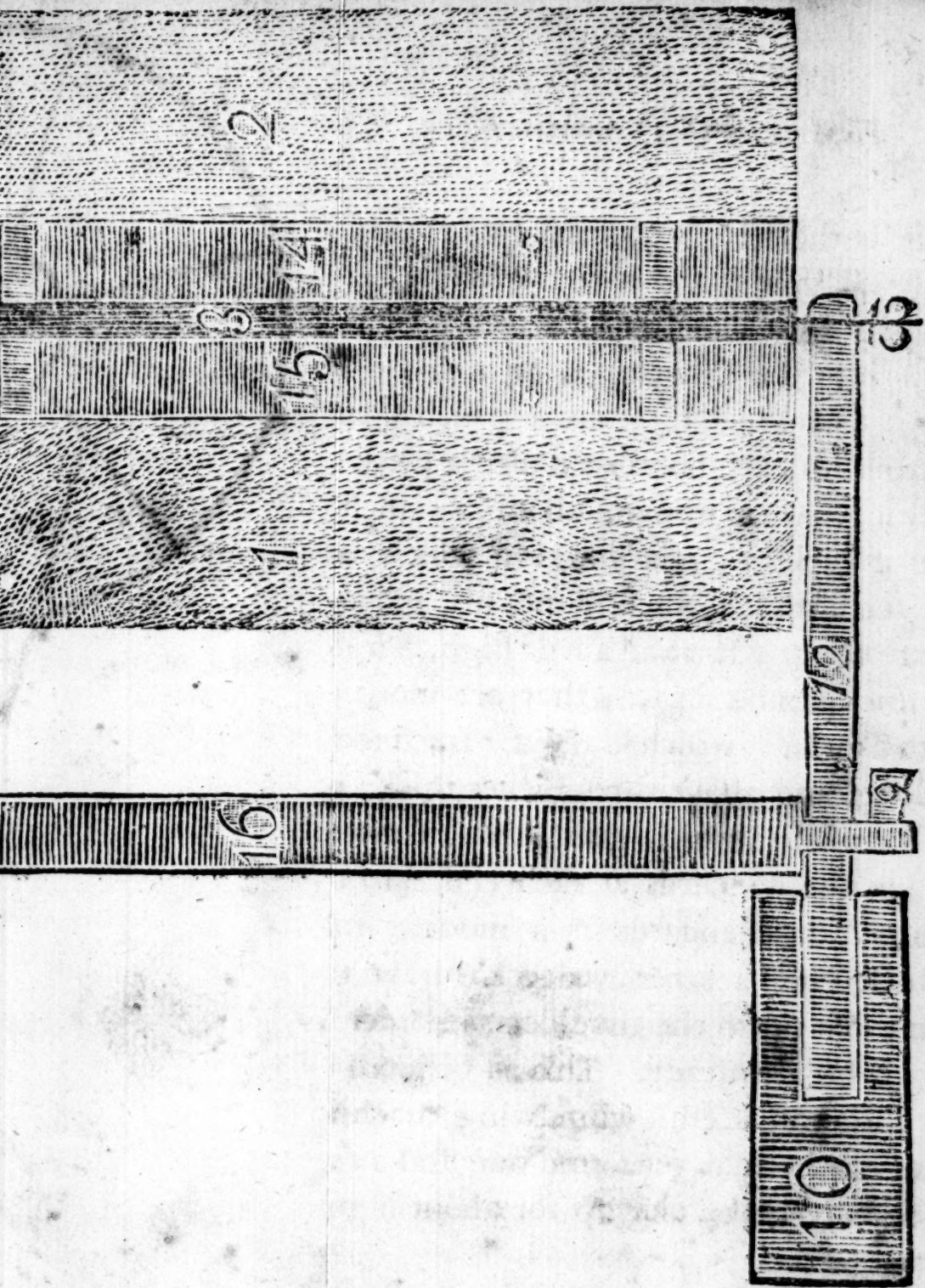


Plate 4.



5 is the handle to turn by, which is fastened in a spoke of the Wheel 4, 6 is a gouging which lies on standard 7, and goes into the axle-tree 3, 14 and 15 are boards, of which there are 4 which forms a cross; to each board is nailed a piece of facking, as 1 and 2, about 24 inches broad each, 13 is a gouging which lies on standard 12, these standards 12 and 7 are about 4 feet and a half high, 2 inches thick, and 4 broad; they are mortised into 8 and 10, which is about 1 foot broad, 3 long; and about three inches thick, 16 is a cross-bar which goes through mortises in the standards at each end, at outside of the standards is a mortise, into which goes a taper wedge to draw the bar close up to the shoulders, in order to keep the fan steady. This is believed to be the most useful winnowing machine that has been as yet found out, and a farmer may make one up for about a guinea.

C H A P. XXXIII.

On making Hay to retain the juices in it though a wet season, and to recover bad Hay.

VARIOUS are the methods of making hay; some people take much more labour about it than others, and perhaps do not make it so well, though they may have weather alike; it is true much depends upon weather, and so does very much depend upon a good method of doing things, reasonable occurrences, a good forecast, and a ready method of getting forward with business may do more in one day, than the reverse would do in two. A man's wits should always be about him, to catch all opportunities in brickle weather, and so should he be always provided, for fear of the worst.

I shall point out the method how I save hay, and let the season be ever so bad, I never have any damaged. I am sure if every hand would follow my directions,

they would have good hay in the worst of seasons: and also in a dry scorching season, there is great precaution to be used in preserving the sap in it.

I see no reason (if hay be rightly made) why it should not feed a bullock in winter as well as in summer, when it was in grass; but this can never be expected without all the real substance it contained in its grassy state be kept in it.

It is not filling the belly of an animal that avails much for feeding, if its food is not impregnated with such oily substances or juices, as is necessary to dilute the dryer particles, and disperse them equally through the avenues of the body, in order that every part may be supplied with proper nourishment to enlarge its premises.

It is my method generally to begin to cut my meadow in rainy weather, particularly if the summer be likely to be wet, that is, after it has rained a day or two; because the odds is above twenty to one

that it will not rain above two or three days together, without an intermission of a dry day or two; and if the grafs be cut in ever so dry a time, it ought to lie two days to shrink or wither before it is stirred out of the swarth, but not longer, lest it should turn yellow at the under-side; but if it happen that you cannot get a dry blast the second or third day, then go with rakes, and turn the swarth over, the under-side up, without spreading, because if you spread it, the ground is all covered, and consequently kept wet, so that you have no dry place to turn it into when a dry blast comes; whereas if the spaces between the swarths be kept uncovered half an hour, the sun or wind will dry the stubble, and then by turning the hay thereon, it will dry more in one hour, than in six if the ground be wet; and it avails nothing to spread till a fair blast is got to dry it.

As soon as it is dry after the first, or at farthest, second day after cutting, (without spreading out of the swarth if pos-

fible it can be avoided) make it into what we call a foot-ball cock; that is, you must shake about half an arm-full of hay into a round heap, then smooth the top, and stroak down round the sides with your two hands, and gather all the ends and loose between your hands into a lump at the under-side of the cock, so that the cock will be round, and this lump is by way of a foot for it to stand on, in order to keep it from the ground, and to give liberty for the wind to circulate round it; the cock stands as it were on one leg, and that leg kept dry by the over-hanging of the body, therefore not one bit is in the least danger by lying on the ground to be wet, or turned black, and being smoothed round about, it keeps out the rain-water, and being so small, there is no fear of its heating be it ever so green put together, because the wind blows through to dry it, and this without having the substance exhaled or fried out by the scorching heat: thus let it stand till it is well weathered and dry, ready to go into a

large load-cock or a stack. I never in my life had any happened bad that I took this method with, and it is also a cheap way, for it is never handled over, or any second trouble had with, but to make it into these cocks out of swarth, and out of these cocks, into large ones. Indeed, if the weather be very good, I only turn the swarth over the third day, then let it lye, and so put it into a common hay-cock the fourth or fifth day, according to the weight of grafs that may happen to be on the ground, and according to the state the hay is in when cut, for if it be cut very green, it will be the softer, lye closer together, and take a longer time to wither.

It is a great mistake to let meadow be too long uncut; for first you lower the value of the hay, secondly the after-grafs, and thirdly you spoil and perish the ground all winter.

It is prudence to put hay together as green as possible, into a stack to sweat, so as not to fire, and to prevent this, make a vent hole, or two or three, according to the size

of your stack; this is easily done, by drawing up a sack stuffed with hay, as the stack rises.

Hay that gets a brown colour by sweating, is always sweet, rich and fattening, because it is the sap, or juices of itself only that caused the heat or sweat.

But if hay have any water in it, when stacked, instead of turning brown, it turns a white mould, so putrefies and stinks, and is very unwholesome for cattle to eat. When it is cut out of the stalk, it is as white and dusty, as if it had meal among it: the way to prevent this, make it wholesome, and also to lessen the danger in green hay of firing, to prevent sickness, and add strength and vigour to the cattle that eat it, is to mix salt among it when it is stacking, viz. every layer of hay, sprinkle a quantity of dry salt; it is inconceivable the value that five bushels of salt would be of in a stack which contained ten waggon-load of hay, and so in proportion; or if a greater quantity of salt,

it is so much the better, for you cannot put too much.

This would be like turning a hay-stack into a salt-marsh, and it is well known, there is no ground more wholesome, for if you turn a poor, tore-down, surfeited horse into a salt-march, it not only purges and clears him of all disorders, but also fattens him very quickly.

In short, every farmer in an inland country, might nearly supply the place of salt marsh, by giving his cattle salt amongst their food, and every now and then, a handful of dry salt in summer, or learn them to lick it out of a trough, which they will soon do, being naturally fond of it; and indeed every animal if it had liberty to follow the dictates of nature, would find out its own medicine; witness the monkeys, how they find out rhubarb, and eat it as a remedy in disorders, tho' they know it will make them sick. It is not natural for a dog to eat grass as food, yet we see how diligently he will find out the right sort for his use, and eat

it as a medicine, by way of a preventive, though he knows it will make him sick: this we see with our eyes; and just so would every animal follow its own natural dictates, were it not subverted, prevented and driven out of its bias, by the ingenuity of man.

When you have old hay spared over year, the way to enrich it still more, (let it be good or bad) is to mix it with dry grafs.

What I mean by dry grafs, is grafs that is, newly cut, but dry from dew or water; begin and make your old stack over again, and lay a layer of grafs, and a layer of hay.

The abundant juices of the grafs will sweat out, and impregnate with the dry particles of the hay. If the hay was good before, it will still add to that goodness; if bad and ill sated, it will enrich and sweeten the poor, bitter, dry husky straw; besides it saves labour of making grafs into hay.

If you have straw, it is very good to

mix grafs with fuch, for the drynefs thereof attracts and receives the superabundant juices of the grafs by which it is enriched, and made as good, if not superior to middling hay. Indeed a great deal may be done to a farmer's advantage, if he please to open his eyes and ears to plain reason.

C H A P. XXXIV.

The culture of Madder described, with a state of the expence of cultivating one acre, and an account of an experiment made with respect to using the green Root for the purposes of Dying.

I Have been a practical grower of madder for several years, and have tried it upon lands of various kinds; and as I apprehend the cultivation of it in England is of great importance to our trade and commerce, I am willing to communicate the result of my experiments to the public.

My first tryal was upon a small piece of ground near my house, of about forty perches of land, lying pretty low and moist, of a deep mellow soil, and rich black mold, a little inclining to sandy; and underneath about two feet and a half, and in some places three feet of good earth, was a bed of loose sand, with a mixture of gravel.

I have been the more particular in the description of the nature of this land, because it produced the best English madder I ever had, both as to quality and quantity.

In March I caused this plot to be dug a full spit deep; and as it was under natural grass for some years before, I took care in digging to throw the top turf as low as possible, turning the mold uppermost, in order to prevent the grass from springing; which had the desired effect. I also took care to pick out all the roots of weeds, and other noxious plants, which were found therein.

In this state it remained about a month; then with a line I divided it into beds of five feet wide, and two feet interval between each bed, raising them a little in the middle with some of the earth in the intervals; then with iron rakes the beds were reduced to a fine garden-mold, leaving them a little rounding, like asparagus beds, in order to shoot off the rain-water; and having procured some strong

pack-thread, at every foot distance I tied a small piece of white woollen-yarn, and thus continued the whole length of the line, which afterwards served as a rule where to fix the plants.

This line was extended the whole length, upon the outermost bed, six inches from the side ridge of it; then with iron-shod dibbles a madder plant was set strong in the ground, near every tuft of white yarn fixed along upon the line.

This row being thus planted, the line was removed two feet forwards, which brought it exactly to the middle of the bed: this being also finished, the line was again removed two feet, and planted as before; and this method I continued till the whole was planted. Thus there were three rows of plants in each bed, at two feet distance, and one foot apart in the rows; and the distance between the innermost row of one bed, and the outermost row of the next adjoining bed, was three feet.

During the first summer I kept the

young madder quite clear from weeds by hand-hoeing, as soon as any appeared; and in October following I took the haulm, that over-ran the intervals, and spread it over the beds, without cutting any off; then with a spade I covered the haulm with the earth from the intervals about two inches thick.

In this condition it remained during the winter, and in March following the young madder came up very thick and strong; and as fast as any weeds appeared, I kept them down by hoeing, as before; but in the second summer I found there was no necessity of repeating the hoeing after the middle of June, for the haulm was now grown so very luxuriant as entirely covered the surface of the ground, and thereby prevented the weeds from growing; and in October I again spread the haulm upon the beds, and covered it over with the earth in the intervals, as before.

There are three good reasons for covering the madder in winter.

The first is the new dressing of the beds with fresh untried earth.

Secondly, by this method deep trenches are formed at proper distances throughout the whole plantation, and consequently the beds are kept dry and healthy, and thereby the roots are prevented from rotting, which otherwise they are apt to do, if the water continues too long soaking on the beds.

The third reason is still more efficacious; for by this means the haulm is entirely rotted, and the volatile salts contained therein are washed down to the roots by the winter rains, which tend more to encrease the vegetation of the plants than double the quantity of any other sort of manure whatsoever, and for this reason, because the salt, inherent in the haulm, is of the same kind with that which was before extracted out of the ground by the growing of the madder, and is now returned into the earth again, in order to renew its former office of vegetation.

This, perhaps, may seem new doctrine to most of my readers; but experience convinces me of the truth of it, with regard to madder.

If this hint was duly attended to, it is my opinion that both farmers and gardeners would find their account in it, in the production of most sorts of vegetables.

But to return more immediately to my subject.

In the third summer very little work was required, only two slight hoeings in April and May, owing to the strength of the haulm, which covered the ground as in the preceding summer; and in October following the roots were taken up, and this small piece of ground produced one thousand nine hundred and sixty-five pounds * of green roots, which were ve-

* This is seventeen hundred, two quarters, and five pounds, and, in kind, at fifteen shillings *per* hundred, (which is a low price as madder now sells) comes to thirteen pounds three shillings and two pence, being the produce of a quarter of an acre only; which sum, multiplied by four, makes the produce of an acre fifty-two pounds twelve shillings and eight-pence.

ry large, and the madder, upon trial, was found to be exceeding good.

In cultivating madder, great care is to be taken to see that every set or plant has some small fibres at the root; and this ought particularly to be observed by those who are employed in taking them out of the ground; for unskilful persons, not used to the business, very often draw up such as have no fibres at all, and then they certainly miscarry.

The best way is, to remove the earth from the mother-plant with a small hand-hoe, or some such instrument; and then you may easily find which of the young plants has fibres, and which not.

In the second spring you must be cautious not to take off above two or three sets from each root; but in the third spring, when they are deeply rooted, you may take off almost as many as you please, without injury.

The sooner the young plants are set after they are taken up, the better; and if you are obliged to have them at a dis-

tance, so that they cannot be set again in less than three or four days after they are taken up, they must be well watered at first planting, and repeated, as often as you see occasion, till they have taken root.

In dry seasons, the young plants very often die for want of moisture soon after they are planted; and in large plantations the expence of watering would be too great; therefore I always get my land ready early in the spring, and wait for some showers falling; and when I find them just at hand, and sometimes in the rain, I get a great many hands, and immediately go to work, some * taking up, and others raking and planting; so that the whole is soon finished, even in a large piece of ground; and when the plants are well watered at first, they soon take root, and afterwards they will stand a dry summer very well.

In the most favourable seasons some

* Women are generally employed in this work, and two men will plant as fast as six women can draw.

few plants always die soon after they are set; therefore, about three weeks after planting, you must go over your madder-ground, and replace such as have failed, with the best and most likely plants; and if the season be dry, let them be well watered at first planting; but if, after all, you find any miscarry, (which, in a dry summer, they sometimes will do) the best way is to fill up the vacancies * with winter-plants, in October following, just before you cover the haulm.

Madder may be successfully planted from the middle of March, to the end of May, according as the spring is either forward or otherwise; but if showers should happen to fall in April, this is the best month in the year for planting Madder. There should be no dung of any kind

* In September or October, when the madder is dug up for use, you may observe, near the crown of the root, several branches thick set with small buds, and some fibrous roots growing underneath: these, when cut into lengths of about three or four inches each, and planted any time during the winter, will grow very well.

N. B. They are called winter-plants, by way of distinction.

laid upon the ground during the time the madder is growing, because it has been found to give the madder a bad colour; and if the land is in good heart, and proper for the purpose, there will be no need of it.

It cannot be expected, that any land, even the richest, should produce repeated crops of madder; for which reason I am told that the Dutch always allow an interval of six or seven years, in which time they manure the land very well, and sow it with corn or garden vegetables, and have always large crops, owing to the deep stirring of the ground, and being clean from weeds; and I can, from my own experience, assert, that the best crops of corn always succeeded a madder-crop.

About five years ago, I planted an acre of madder on a light, dry, sandy soil, which produced a tolerable crop, but nothing equal to the other.

I likewise tried it upon an acre of land, of a loamy, mellow soil, somewhat sandy, about a foot deep in mold; and under-

neath is a cold, stiff clay ; from this piece I had great expectations, as the plants thrived very well at first, but in the second summer, when the roots reached the clay, the plants died away, and came to nothing ; therefore I am well satisfied a cold clay is by no means proper for madder.

I have also, at this time, two other acres of madder, which I intend to take up next winter ; it will then have stood three summers. The soil is a deep, hazel mold, worth about twenty shillings per acre. Instead of digging it with the spade, I plough-trenched it at least eighteen inches deep, but managed, in all other respects, like the former. From the appearance it made last summer, I have no great expectations from this plantation, though, I fancy, it will be a saving crop.

*Expences attending the culture of an acre of
Madder, supposing the land to be worth forty
shillings per acre.*

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Rent for three years.	6	0	0
Digging ditto at two-pence per perch	1	6	8
Dividing ditto into beds, two men one day, at one shilling each	0	2	0
Raking ditto, two men one day, at one shilling each.	0	2	0
Planting ditto with two thousand plants, one day, at one shil- ling and sixpence each	0	3	0
Six women to take up two thou- sand ditto, at six-pence each, one day.	0	3	0
Hoeing the first summer five times	0	15	0
Covering ditto in autumn the first year	0	6	0
	8	17	8

On the culture of Madder. 321

Brought over.	8	17	8
Hoeing ditto the second summer			
three times. - - -	0	9	0
Covering ditto in autumn the			
second year - - -	0	6	0
Hoeing ditto the third summer			
twice. - - -	0	4	6
To be paid in lieu of tythe, at			
five shillings per acre per an-			
num - - -	0	15	0
Digging ditto out of the ground	5	0	0

Total expence. 15 12 2

As I always allow my people beer
when they are about this busi-
ness, I may add - 0 6 0

Which brings the whole expence to 15 18 2

In the above account I have not reckoned
any thing for the plants; for though they
cost considerably at first, yet it is then done
once for all, to any person who continues
to propagate madder, as he has always a

constant supply from his own plantations.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Produce of an acre of madder	52	12	6
Expences. - - -	15	18	2
Clear profit. - - -	36	14	4

In the business of dying, a great deal of madder is used; and being of opinion that there are many useful discoveries now lying dormant, only for want of proper methods to bring them to light, I determined to try an experiment on madder; accordingly I took twenty pounds of the green root, and having washed it clean from dirt and filth, I bruised it in a large iron mortar just before using, and with other ingredients I dyed half a pack of wool of a dark, full drab: upon examining my colour, I found it full as good as though I had used four pounds of the best umbro madder, imported from Holland; so that, according to this calculation, which

is founded on experiment, five pounds of green madder-root is equal to one pound of dry manufactured madder; and as I have found this method to answer, I have continued to use the root in this condition ever since, and find it much the best and cheapest way; for the green root is bruised very easily in the mortar, and thereby saves a great expence in drying, pounding, &c.

Before I quit this subject, I would advise those persons who are inclined to cultivate madder, to be very cautious in the choice of land for this purpose; for hereon their success chiefly depends. Madder being a plant that draws a great deal of nourishment, consequently the richest and deepest lands are to be chosen.

If the English farmer should be excited to so laudable an attempt to cultivate this useful commodity, they will probably find the directions here laid down not only useful, but necessary, as being the result of many years experience.

To preserve green madder-root, cover

it over with sand, or dry earth, till you have occasion to use it. And I have reason to believe it might be secured in this state for many years (without injury) on a dry earthen floor.

The above are experiments made by a sensible man; and as he is both a grower and consumer of this plant he must be a more able instructor in the culture of this useful commodity, than what I can pretend to. I am so far convinced by self-experience, that clay-ground is not good for madder, because its consolidated close nature confines the water about the root of the plant in winter, and chills or rots it; and in summer it will bake and bind it so fast that it cannot spread or grow; neither is light, hot sand good for it, because by its open porous loose nature, the sun quickly exhales the moisture from about the root of the plant, so consequently robs it of the supply of its life, or at least reduces it to a sickly weak condition. A deep, black, loamy hazel-earth is the best of all others; and a maiden-soil

is better than old, tilled land: the sod by trench-plowing must be turned to the bottom of the furrow, about two feet deep, and there it rots, and becomes a mass of manure, to nourish and feed the tap-root and the nature of this plant is such, that the deeper the tap-root goes, the greater and better top it will produce: in short, there are few towns in England, Scotland, or Ireland, but what have spots of land, belonging to them, suitable for this plant, and might be cultivated to great advantage to the farmer, dyer, and to the public in general, by keeping a great deal of money at home, which annually goes abroad for this commodity.

C H A P. XXXV.

General remarks on Stock-farms, and the different state of the English and Irish Farmer, Poor, &c. &c.

AS this chapter is chiefly intended for my Irish readers, the English may disregard it if they please.

My long acquaintance with, and frequent travels through Ireland, have given me a knowledge of the lands, inhabitants, and constitution of the kingdom in general.

I must own my surprize was great, at my first journey into the country, to see about three-fourths of the inhabitants living in little huts or cabbins, built of fods, and covered with rushes, flax-shoves, or the like, not sufficient to keep out a shower of rain, and that a man can scarcely stand straight in; yet they are perhaps inhabited by eight or ten men, women and children, half naked, and whose chief sup-

port of life, is potatoes and butter-milk; their bedding, nothing but straw or rushes, and this sometimes in a sparing manner.

No wonder then that a scene like this should shock an Englishman, who had not before seen even the brute creation live and lie worse. The high roads also stocked with beggars, whose cant-prayers and cries are enough to shock the frame, and grate the ears of those who have in them any fellow-feeling.

Indeed I have read of such unhappy wretchedness subsisting amongst the savages or Hottentots, but did not expect to find it so near home.

Such an unexpected scene amongst my brother Christians, naturally led me to make comparisons between the poor of the two kingdoms: these of Ireland in the unhappy state as above; and those of England who live in the midst of plenty and decorum.

Go into one of those poor mens houses, it is more than an equal chance, but

we shall find a clock, pewter, chairs, tables, feather-beds, sheets, blankets, quilts, hangings, &c. &c. all in regular, clean, decent order; there we shall see also hang-beef and bacon, cheese, bread and butter in their pantries; all this is the fruits of good living.

But however, they do not eat the bread of idleness, they keep up to the scripture-phrafe, where it says, He that will not work, let him not eat.

You may visit one of these houses a great many times, and not find the men-part of the family idle, or at home, they are (sundays excepted) always at work; the women and children also are not without their employ of some sort.

Thus the children are brought up in the midst of morality, industry, and plenty. It is almost a miracle to hear God's name taken in vain, cant-prayers, imprecations, or oaths made use of.

A swearer, lyar or pilferer cannot live amongst them. Such are shunned (as they ought to be) like a mad dog; and it is

well known, that idleness is the inventer and a prelude to all such sin and wickedness; for while the body and the mind are barren from good works and thoughts, invention of sin and wickedness fill its place.

The farmers of England, their children, servants and labourers, are the most innocent, honest, and godly people in the known world; their word is as good as a bond; they seldom promise, but when they do, they faithfully fulfil it.

With them, a man that breaks his word, or tells a lie, loses his character, and the good opinion of his neighbours; and when that is gone, he has no more business or satisfaction in that neighbourhood; and what is more, he cannot quit it, if a poor man, as no parish will take him in, or lett him a house, without being first indemnified by the parish he belongs, that he shall not be burdensome or troublesome to them. All these good precedent morals, constitutional laws and lessons, make them a valuable useful bo-

dy or set of men; and on which the riches of any kingdom depends.

But if we again turn our eyes on the poor of Ireland, how many thousand families may we find, that instead of being useful, are a pest to society; their children are trained up to lying, swearing, pilfering and idleness; they may truly be said to have a dog's life, hunger and ease.

However, in all this they are rather to be pitied than condemned, as the scarcity of work may be considered as a real misfortune, both to them and the kingdom in general. The poor, however, feel it most sensibly.

The above description of the Irish poor, is too truly their unhappy case; and tho' the gentlemen of Ireland, (whose benevolence and charitable disposition is unquestionable) who labour indefatigably to cure these grievances, by giving premiums, building large poor-houses, &c. &c.

Yet with humble submission, I apprehend the malady is every day growing

worse, and is to be feared, will, till some method is taken to put a stop to these over-grown stock-farms. These are the chief and real bars to the riches, prosperity, improvement, industry, good morals, regularity, cloathing and feeding of the poor of Ireland.

I have travelled through the kingdom many times within this twenty years, and particularly within the last year, have been very minute in my observations; and it appears to me as clear as the noon-day, that these large over-grown grassing, or stock-farms ever were, are, and will be, the ruin of Ireland, as they are a stagnation to trade and improvement; for what improvement does three or four thousand bullocks (which occupy more acres of land) create or require? In short, they in a manner, lay waste a country, as four or five families are sufficient to take care of this tract of land, and number of cattle.

It is a known truth, that the riches of every country depends upon the labour.

ing part of its inhabitants. On those every branch depends that is necessary for the use of man, whether for back or belly. But in such waste countries, the poor are deprived of all manner of means to be useful, either to themselves or the public; they must either starve or turn out to beg or steal, or perhaps both. This is too truly the state of the case, which every well-wisher to Ireland may be sorry for, as it must effect every individual thereof in one respect or other, and the very graziers themselves are not making the best use of either their land or time; they only live from hand to mouth; it is true, they live well, and drink punch and claret, but few of them (though they hold from five hundred to five thousand acres) can portion five or six children with a thousand pounds a piece. Then is not this a shame, that a man shall take up such a tract of country, to so little utility, for his family or the public good.

In short, he has nothing to plead in his behalf, but that he gets his living in

an indolent easy manner; for, says he, corn is troublesome; and if you tell him how well the English farmers live by it, he again answers, that they have free exportation, better markets, &c. a cock and a bull, a story he knows nothing about. Likewise, says he, land in Ireland is too dear to pay rent by corn; more delusions and phantoms to fright and keep him from pursuing his own interest; but I assure him these arguments are falsely grounded.

Can any man say, and prove that he can make ten pounds an acre by grazing; and will not land worth twenty shillings an acre, by proper tillage, bring ten barrels of wheat, worth ten pounds.

But if we make a comparison between the lowest crop in value (which is oats) we shall find that it will have the advantage of grazing above two to one. As for instance, how common is it for a grazier in Ireland to lett his land in corn-acres for three or four years together; the first for grafs-potatoes at five pounds an acre, and

for two or three crops following, at three pounds an acre for oats, and this to a poor man which has both plowing, feed, and labour to find, and his family to maintain out of that acre; then certainly such an acre must make six or seven pounds at least, to pay all expences, and maintain his family; if so, it must make more to the farmer who has teams or carriages, &c. without hiring; but here again he is pleading indolence; for, says he, it is easier to count 3 l. in cash, than to manage an acre of oats.

Now suppose he sits down with the worst hand he can make of his land, namely, the three pounds an acre, yet it is double what he could make by grazing, for the grazier thinks himself well off, if he can make thirty shillings an acre throughout his farm. There is no sophistry in this, it is all plain and clear to a weak understanding, that corn is the greatest profit.

Further, the Irish farmer is mistaken, when he says or argues that the bounty

for exportation, gives the balance in favour of the English farmer. How can this be? is not every commodity worth what it will bring? does not the corn factor find out the highest market, to send his cargo to? and does he not also find out the lowest market, to lay in his cargo? and if he buy it in England, must not that be the lowest market? and if he brings it to Ireland, is not that the highest market?

If this reasoning will not stand good, a merchant could not trade; for the bounty money will not pay the expence and freight, let alone profit and hazard.

But suppose there was a great advantage in it, the farmer gets it not, he sells it at the lowest market, as there are several traders to get a living by it after it parts him, such as the merchant, mariner, broker, &c. Therefore it is plain his corn is going to a higher market, and if that be Ireland, certainly the Irish farmers have the profit of all these branches, because he is at home in the highest market, where all those have a living to get by trading thereto.

Indeed if Ireland was to raise more corn than she could consume, so as to reduce her market lower than any other, then she might cry out for a foreign trade with authority.

But however, this is not the case, for I have known Ireland for near twenty years, and always found her markets higher by ten or fifteen per cent, than in the corn-countries of England. I do not mean Liverpool, for there corn generally bears the same price as in Dublin, as it is as easy to import corn from the interior parts of England to Dublin, as to Liverpool. For Lancashire, and Cheshire, are no corn-countries, their produce being chiefly cheese.

Now we see by the above, that the Irish farmer has a great advantage over the English, both in point of market and rent.

For by the nicest calculation I can make, I find the lands of Ireland are cheaper or lower than in England; for suppose the best and smoothest land in Ireland be up-

on a par, at twenty shillings an acre; by the same rule, the best lands in England will only be at about twelve shillings an acre; besides the taxes in England are higher, and labour nearly double the price: this is all on the Irish farmer's side.

Now perhaps my Irish readers may think I talk like a traveller, when I tell them that an English farmer who never farmed more than one hundred a year, shall expend twice as much meat in his house, and save more money (in a general way of speaking) than an Irish grazier that pays from 1000 to 1500 l. a year rent. Nay, in short I know several fifty pounds a year farmers that are worth more ready money than some Irish graziers of two or three thousand a year rent. This I believe will be assented to by any gentleman that knows the two kingdoms.

Then certainly the Irish grazier will never pretend to say that grazing is able to pay the highest rent or make the most money in any degree.

But however, that he may be the more

clearly convinced, let him cast his eye over the different tables in this work, to see his folly. He will likewise see, that the corn farmer will not deplenis himself or the country from cattle, because he can breed and feed as many as will keep up a proper stock.

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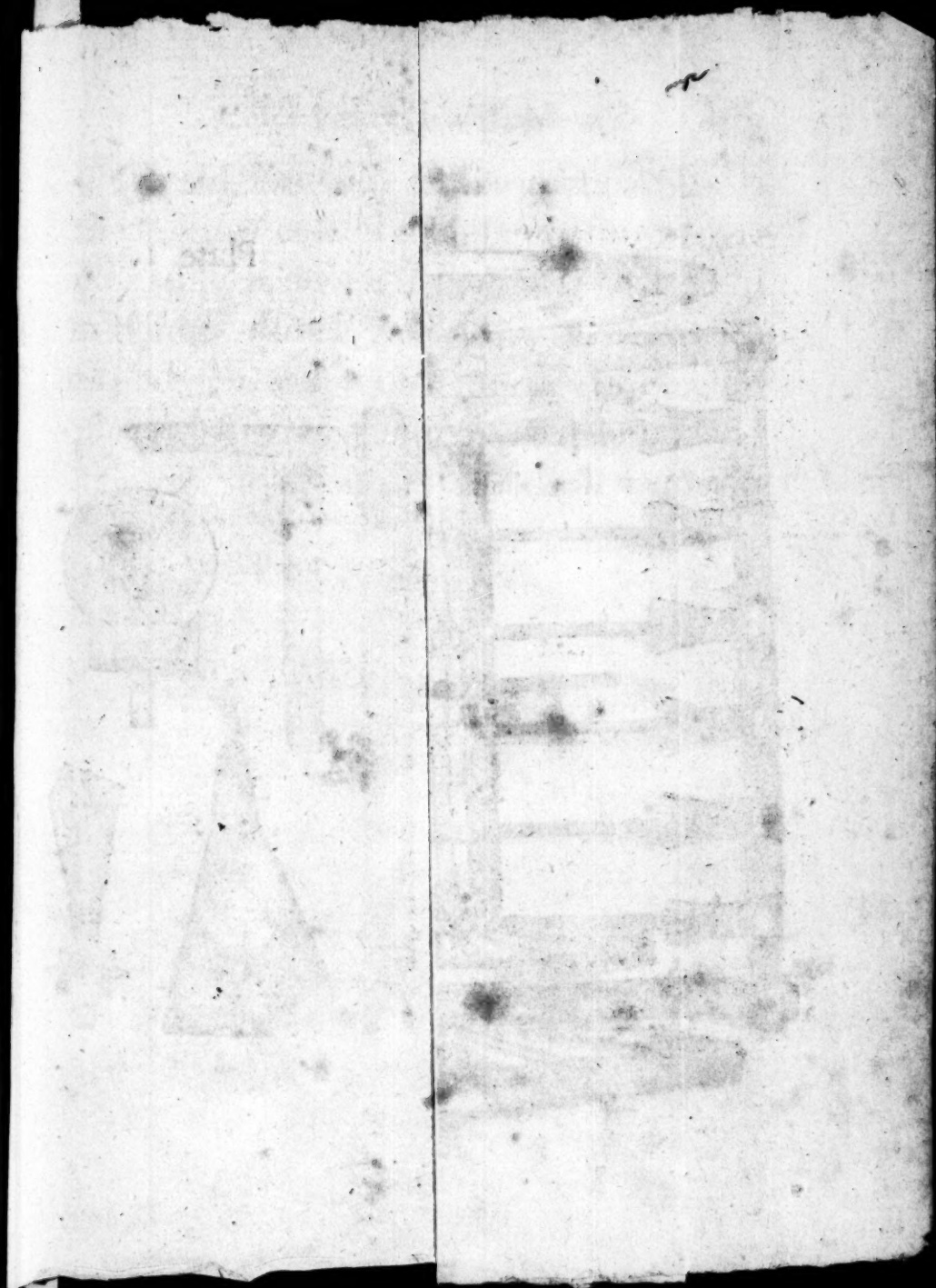


Plate I.

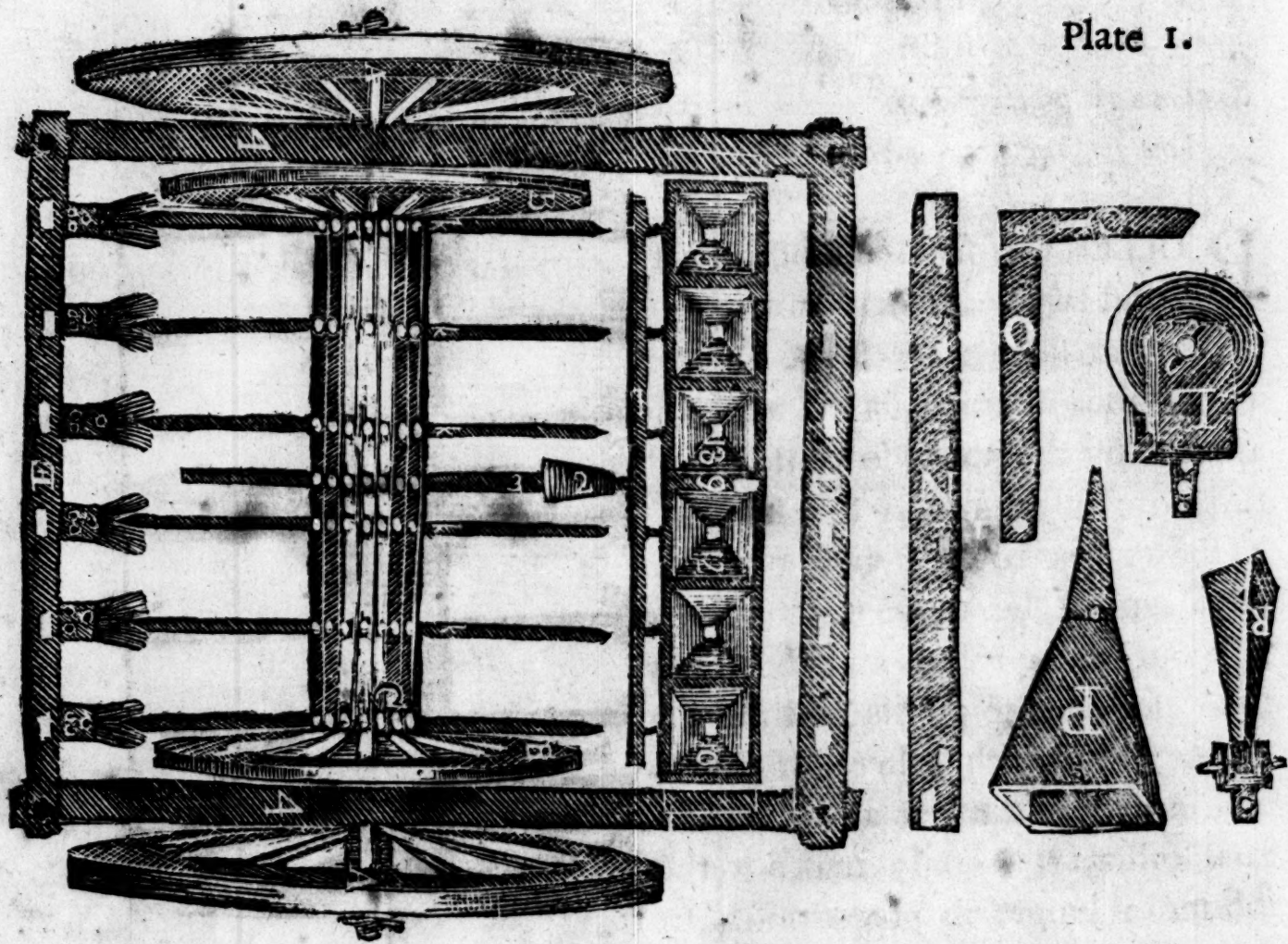


Plate 1.

Explanation of the Authors new invented Machine for the new method of husbandry.

ROLLER C is five feet and a half long, and twelve inches diameter; it has sixteen flat sides, in each are fixed six pins at one foot distance from each other, as appears by the holes, so consequently the full number are ninety six: k, k, k, k, k, k, shews one row of these pins, each of which must be nineteen inches and a half out of the roller, and then they will splay, so that the points will stand twelve inches from each other. If you would hole nearer or farther at a distance from each other, it is only making the pins shorter or longer in proportion. In each end of the roller goes a gudgeon which the frame 4, 4, lies upon.

The gauging wheels B, B, go upon the end of the said gudgeons, betwixt the frame and the end of the roller; these

wheels are to gauge the depth they are to sink into the ground.

The wheels A, A, are to put on occasionally to convey the machine from field to field.

In E are fixed six standards opposite to each row of pins, in which are fixed six besoms to scratch the dust off from the ends of the pins in wet weather.

In the sixteen holes round the middle of the roller are fixed cogg-pins as shewn by 3.

10, 11, 12, 13, 14, 15, shews the mouth of the hoppers fixed in the feed-board.

P shews one of these hoppers, the small end or pipe of this hopper goes through the feed-board, and near the surface of the earth, which, by the help of the slide-board; (as each end runs in a sliding mortise in the frame 4, 4,) you can move and fix the pipes of the hopper over the holes in the ground at pleasure.

The small tongue (shaped like a feril, to which the hand points) is fixed in a

mortise in the pipe, and the broad end presses against the under-side of the slide-board N opposite to the holes, which board N goes under the bottom of the feed-board, and through mortises made in the pipes.

The holes through the feed-board, and those in the slide-board are opposite each other when the machine is sowing, but by slipping the slide-board about an inch, it shuts both holes which is necessary, and done with the touch of a finger while the machine is turning at the end of the ridge.

The mortise in the feed-board opposite 9, is to admit the tenon of the frame in which the small wheel runs, as shewn by L; this wheel is to bear up the hind part of the frame of the machine, and can be made lower or higher, therefore determines any distance you chuse the pipes to stand from the ground.

In the piece of wood shewn by 7, you see six small pins, which go under the feed-board, these are the small ends of the

six tongues which play against the slide-board.

In the round part of the tongue goes a wire about an inch long, which plays through the hole in the slide-board among the corn, and keeps it from choaking or stopping.

This piece of wood 7, (together with a piece of iron which screws into it, as shewn by 3) presses down the small ends of the tongues, and as they play upon a wire in the middle, the other end presses contrariwise against the under-side of the slide-board, which is opened and shut when the machine moves by the iron 3 playing upon the cogg-pins (which is in the middle of the roller) shewn by 2.

P shews a piece of wood which slides along the ground, it is three inches thick, but thinned to a feather edge, by taking the timber away from one arredege; there are six, and each tenon goes into a mortise in d; this coverer plays in a swivel as appears by the cut; this is to gather the

mold over the seed and fill the holes.

O shews a marker, it reaches to the middle of the horse ensuing track, in order to mark where he is to go the next time; there must be one at each side, because he turns and goes one time with his right side, and the other with his left to the unholed-ground; that which is not in use is brought forward and laid upon the shaft; they are fastened to the frame 4 by iron screws. I hangs down to trail along the ground to scratch and shew the track where the horse is to go.

In E is fixed two hooks, on which a pair of shafts or files (like those of a cart) goes, by which the horse is to guide and draw the machine.

By taking out the iron-clapper 2, you may hole without sowing, or you may omit making the hopper board, (in which most of the nicety depends) and still you will find the holing machine extremely useful; because when the ground is holed, seed may be dropped into each hole by children, grain by grain, at a very small

expençe, as appears by the table on this work; as also when you hole the ground for transplanting, you are not to take notice of the feed-board.

C H A P. XXXVI.

A few chosen Receipts which have been proved by the Author to be valuable for the cure of horses and cattle.

AS I am a farmer and no doctor, I do not intend to bestow much paper on this subject: what I propose is, to give my reader a few valuable receipts that I myself have proved.

For many years I have been mostly my own horse and cow doctor, and always found more success from my own performances, than when I trusted my cattle to conceited, ignorant, blundering ferriers, who oftener act by chance than judgment, and who have killed me cattle that I myself could have cured.

It is not two years ago since I had a valuable mare killed by a fellow applying wrong drugs, and her disorder was of such a slight nature, that if she had been let alone she could not have died

of it, but I happened then to be from home.

Books of ferriery are doubtless very useful when they fall into the hands of men of sense, who can dive into, and lecture upon a disorder; he that can do this, certainly can chuse out a proper medicine when he has a book before him containing several hundred receipts, and multitudes of different kinds of drugs prescribed; such books are generally intended for the unskilful; but I am of opinion that it requires more skill to practise from them, than to write them, as there is more stress laid upon the judgment of the reader than the writer, is plain; for when the writer has described a disorder, he will give you a catalogue perhaps of ten or a dozen receipts, made up of as many different drugs to each, and generally goes on, you may apply this, or this, or this; therefore he certainly leaves you to chuse what he himself could not determine to be the best; and if he did know which was the best for

such a disorder, he ought to have inserted that, and no more; if one will work the cure, why should he perplex the ideas of an ignorant man with such a multitude? for my part I always found the fewer the better and safer.

The cause and cure of Grease in Horses.

THIS is one of the most common disorders that this fine animal is subject to, and it is very disagreeable to his master, as well as painful to himself; though it is not often attended with immediate death, yet it is generally a prelude to other disorders, which in the end prove fatal; and though a horse get twice his allowance of corn, he will not be fat, as long as he has the grease; for instead of curing, it heightens the malady.

There are few men that keep horses, but what have a trial at this disorder sometime or other; and though there are as many cures prescribed perhaps for this as the tooth-ach, yet I never saw one that

corresponded with the real cause of the disorder: and indeed it must be a chance-medley if a cure be struck out without knowing the foundation of the malady.

In this as well as in most other cases, there is nothing more plain than that the first spring of this disorder rises from an over-heating of the blood, and then a sudden cool, which causes a stagnation of the fluids while they are all afloat, and mixed with the inflamed fleshy part of the body; for it is to be observed when a horse, or any animal is hot, the flesh swells, and is larger than when in a temperate heat; this is owing to the blood and other fluids of the body being melted or thinned, then raised into a fermentation and mixed with the flesh, which expands and opens the pores of that and the skin; this admits air among the fluids and fleshy part of the body, and then cooling suddenly, it thickens and is stagnated in this situation; but it cannot rest long there, for the air corrupts and turns it into a thin mat-

ter, which without entring into the tubes, arteries, and blood-veffels, (for it cannot, they being inclofed with a tough skin) it drains off through the pores or grain of the flefh, by the moft perpendicular direction to the extreme part of the horfe, which is to the very hoof, and when it comes there can go no farther, but putrefies and wounds the fkin till it makes its paffage; and when once a current is fixed, all the foul floating matter belonging to the flefhy part of the body difcharges itfelf that way.

There are two questions that I might naturally be asked, viz. why is a horfe when taken from grafs in Autumn, tho' not much heated, apt to greafe: and why is a flefhy legged horfe more fubject to this diforder than a lathy-legged one? this is very eafy accounted for.

As to the firft, we are to confider that grafs in Autumn is a foft, frothy, unwholefome feeding for a horfe; and the reason is this, the grafs thrown up by the Michaelmas fpring, is imbibed and only con-

sists of a volatile, soft, watry acid, for the part of the grafs which is of a firm texture, and loaded with juices of a solid, nitrous spirit, is the spindle, which grows out of the root in a perpendicular manner, and consists of a tube with several joints, and on which grows the seed: but none of this sort grows in edish, or after-grafs: what grows at the latter end of the year is only leaves of little real substance; so what flesh they lye on, is of a soft loose, watery, open, porous nature, and this proves itself to us every time we ride a horse at this time of the year fed upon it, for a small motion or action will cause him to sweat immoderately; what he throws off thus, is no other than a volatile air that he took in by the soft feeding, and which is mixed through the fleshy part of the body that keeps open loose and porous.

If you give such a horse much corn at taking him first up, it will heat his body and cause an inflammation in his blood, and floating matter, which corrupts, and

turns it into a digestive thin substance which makes its passage, as in the former case, by the perpendicular direction. As to the fleshy legged horse, his may be deemed as an attraction to divert the digested, foul matter that way, for having such a load of flesh about his legs, it works, and shakes, every time he takes them up, and sets them down; and such a friction keeps them continually in a heat, which inflames the parts, and these communicate their heat to the thighs, by which it attracts the attention of the fluids that way, so that in fact, the fleshy leg is a continual seat for such inflamed matter.

To prevent the grease when a horse is taken from grass.

WHEN you take a horse into the stable from grass, if your situation will admit, for the first week, take him in at days, and give him a feed of corn, and turn him out at nights; the second week, take him in for altogether; bleed him the first day, and only give him about two quarts

of oats, morning and evening for a week; every day give him a gentle exercise, so as to raise him into a moderate sweat; before he cools, give him some scalded bran, and walk him a little after it: add to his feed of corn by degrees: thus continue till you find that he will bear exercise without sweating, which is a token that you have wrought off the loose, frothy feeding, and brought his flesh to a firm texture.

To prevent a hunter or over-heated horse from greafe.

WHEN a horse is very hot after a chase or hard riding, when you alight, order that he be well rubbed, then walked sharply about with a cloth over him, till a peck of scalded bran is got ready, then let him eat it, and walk him for half an hour after briskly, keeping him covered; as soon as he is dry, curry him well, and hand-rub his legs; keep him warm with cloths, and give him warm water, with a handful of oat-meal

in it to colour it white; if you have a cordial-ball give it him; no man that has a horse ought to be without these balls, as it is much better to prevent a disorder than to cure it.

To cure the Grease in Horses, be the horse legs ever so bad.

YOU see in the above sheets from what the grease proceeds, and knowing the disease is half the cure.

When your horse has broke out in his legs, give him a cordial ball in the morning, and after it a good brushing gallop, so as to raise him into a gentle sweat; have a peck of scalded bran ready against he comes in, let him eat it, and all the time he is eating, it let him be well rubbed with a wisp; after he has eat the bran, walk or trot him gently for an hour; against he comes in have a poultis ready, made of old butter-milk, and oat-meal, boiled together in the nature of an hasty pudding, spread it thick upon a cloth, then sprinkle over it a little oil of turpentine, bind it

well about his legs, so that it cannot shake off; serve the fore-legs the same way, if they be broke out; at night give him another feed of bran; the next morning serve him as you did the first, give him a gallop, a ball, and a mash of bran, and put another poultis; and the third morning likewise; but the third morning, when you lay on the poultis, let it be larger than common, bind it on well, and never take it off, or the horse out of the stable, till his legs are quite healed and well, which will be in about four or five days, be the greafe ever so bad. This is the most excellent sure cure in the world; I never saw it fail; and I have bought horses for a trifle, that have been judged incurable, and cured them by it.

The melted foul matter is discharged three ways; first, by sweat, but this must be moderate; secondly, by the bran; thirdly, by the poultis; for this poultis sucks or draws all the foul matter, or stagnated fluids out of all the adjoining parts; for these must have vent that way, there

is no turning them back, or diverting their course to any other point.

The poultis renders the sore as white as curd, and very supple. The reason of letting the last poultis lie on so long, is, that it may dry to powder, in order to health e fore. The poultis, while wet, sucks and cleans the sore from all corruption, and nothing will heal as long as any remains there; but it being discharged, the powder is sure to heal the sore. I have often cured horses, that were not very bad, with one poultis, laying it on, and not taking it off till the horse was well. You had better not give too much corn while under cure, but give plenty of warm water and scalded bran.

A purging Glister for an Inflammation of the Lungs.

TAKE fena, and marsh-mallows, each two ounces, Fennil and bay-berries, each one ounce, boil-in five pints of water to two quarts, pour off the clear, and add four ounces of purging salts, three of the

syrup of buckthorn, and half a pint of lintseed-oil; give him the glyster in a glyster-pipe, let it be as warm as new milk; if the malady do not abate, repeat it the second day.

It is necessary the horse should have a great deal of blood taken from him; the first day two quarts, the second day two quarts, and so continue every day drawing as much as you find the horse can bear to lose. The above glyster needs only be used when the horse's case is desperate; neither can all the drugs be easily got in country-towns, therefore the following glyster may answer nearly as well, and in many cases better and safer, except the fever and inflammation be very high, as above observed.

Take a pound of treacle, boil it in a quart of milk till it crudles, clear off the curds, and add to the whey half a pound of honey, and a pint of lintseed-oil, give it to the horse blood-warm, one part in at the mouth, and the other glyster-ways; by this it will disperse all through his bow-

els, incorporate and mix with his dung, which in some parts may be dry, hard, and baked, occasioned by the heat of his disorder; but this will effectually remove any obstruction in this case, by evacuation, and also throw him into a sweat; these together seldom fail of a cure, if the horse be curable. The dose may be repeated as often as you please, as it can do no harm, and is very nourishing. It will still be better to add half an ounce of the oil of ani-seed, or if it cannot be got, bruise an ounce of ani-seeds in a mortar, and boil it along with the milk and treacle.

There are very few inward disorders a horse or cow (for it is good for both) is afflicted with that this simple medicine will not remove, but the beast must be kept very warm; it is also necessary that a small hand should be greased and put up the fundament, to draw out all the hard dung within reach.

The horses drink must be warm white-water; that is, a handful of oat-meal put

into a tub of warm water. His diet must be scalded-bran, boiled oats, and every second day a mash of malt; give him a little sweet hay out of your hand every now and then till he begins to recover.

Bracken's Cordial-ball.

THESE balls taken by way of a cooling gentle purge, to prevent sickness, keep a horse temperate in his body, and give him a free respiration; they are much used to running-horses and hunters.

I have used it many years with great success, and believe it to be both an excellent preservative and restorative: however it is too expensive for a farmer to use it: commonly I found it so myself, therefore many years ago I omitted two of the most expensive articles, and in their place added two of my own chusing, which I found to answer full as well, and for many years have used none else, except for a fine delicate horse by chance.

I shall give Bracken's first, and then my own, viz.

Take ani-seeds, caraway-seeds, and greater cardammoms finely powdered, of each one ounce, flour of brimstone two ounces, turmerick in fine powder one ounce and a half, saffron two drams, Spanish juice dissolved in water two ounces, oil of ani-seeds half an ounce, liquorice powder one ounce and a half, wheat flour a sufficient quantity to make it into a stiff paste beat all the ingredients well in a mortar together; give the horse a ball at a time about the size of a pidgeon's egg.

Bracken's Cordial-ball curtailed in Expence by the Practiser.

TAKE ani-seeds two ounces, caraway-seeds and greater cardammoms-seeds one ounce each; these must be finely powdered in a mortar; then take half a pound of treacle, and half a pint of milk, boil them till it parts in curds and whey, then take off the curd and put the above powdered-seeds into the whey, with two

ounces of Spanish juice, and boil them till they are reduced to a thickish substance, then put them into a mortar, and add flour of brimstone two ounces, turmeric in fine powder one ounce and a half, liquorice powder one ounce and a half, half an ounce of balsam of sulphur; bruise and mix all well in a mortar, and add as much flour of malt (for wheat-flour is binding, therefore a contradiction in nature) as will make the ingredients into a stiff paste, and give the horse about the size of a pidgeon's egg in a ball, or else dissolved in a pint of warm ale, by way of a cordial drink.

There can be nothing better than this given to a broken-winded horse to give him ease; but there is no cure for this malady,

To kill Worms in Horses.

GIVE the horse (troubled with worms or grubs) three mornings together, a pint of strong rue-tea, in it bruise and

squeeze the juice of three or four heads of garlick; dissolve in it a handful of salt.

To cure a fore of any sort.

TAKE one ounce of Venice-turpentine, mix with it the white of three eggs, beat them up together till they be in a white froth: use it by the way of a tent or plaister. If it be a green fore, first wash it with oil of turpentine, and then lay this on: if it be an old fore, wash it with alum-whey, and if it contain dead flesh, cut it out as near as you can, and lay some green verdigreese on it, under the plaister; continue to do this, till the dead flesh is eaten off; and when that is gone, there is no doubt but this salve will cure any fore: if it be in summer-time, and that your horse run among flies, rub over and round the plaister a little train-oil, and the flies will not come near it. There is one observation you must always bear in mind, and that is to give vent to your fore at the bottom part, for all matter works

downwards, and it is impossible to cure a sore as long as either matter or dead flesh is there: inded if you keep a sore clear of these incumbrances, it will heal itself, and there is no better thing for that, than washing it with alum whey.

To cure the Mange.

TAKE two pounds of tobacco-dust, and and boil in one gallon of old chamberlee, bruise very fine half a pound of stone brimstone, and put it into the liquor, let it lye a day before it is used; wash the horse all over, but first bleed him well, and either give him two or three cordial balls, or some sulphur mixed up in new milk.

To cure a strain in the shoulder, or a clap in the back sinews.

AS soon as you perceive the horse strained, immediatly bleed him in the plate-vein, then take oil of turpentine, oil of

spike, spirit of wine, and the ointment of marchmalos; each one ounce, mix them together over a gentle fire, then hold a hot bar of iron as near the shoulder or fetlock as the horse can bear it, and rub the oils well in. Tye the horse short to the rack, as it will smart him for about half an hour. If it be a strain, or what is all one, a clap in the back sinews, bleed in the fetlock vein, just above the hoof.

Z Z 2

C. H. A. P. XXXVII.

A few receipts for the cure of black cattle and sheep, proved by the author.

To cure the red or blend water in a bullock.

TAKE a piece of lean hung beef, dry and bruise it to powder; do the like to a red herring; mix these powders together; then add to them an ounce of bole-armoniack, and a handful of shepherd's purse, stamped very small, mix all these together in a quart of the strongest, oldest ale you can get, this will make two doses; give it two mornings together lukewarm.

To kill Lice.

BOIL a pound of tobacco-dust in a gallon of spring-water, and wash the beast over, or else rub them over with train-oil which will both kill lice, and keep flies from disturbing the cattle in summer.

To stop scowering in Cattle.

TAKE half a pint of old verjuice, and mix in it an ounce of bole armoniac reduced to powder, or for want of this, bruise to powder a large handful of kennil-coal, and give it in a quart of new milk three mornings together.

To make a Cow take Bull.

GIVE her three mornings together three pints of milk each morning warm from any cow that is a bulling; put into the milk a handful of rye-meal; let the bull go with her, and she will soon take him.

To cure the Maw-burn.

TAKE two quarts new butter-milk, half a pound of honey, and a pint of lint-feed-oil, mix all well together, and give it lukewarm one half as a gly-

ster, and the other down the throat; but rake the beast first, with a small hand well greased.

To kill Worms in Cattle, prevent sickness, and make them thrive.

TO every gallon of water mix half a stone of salt, and a quart of tar, and give every beast a pint once every fortnight, particularly if you dread any disorder: if you give your cattle a handful of dry salt every ten or fifteen days, it will make them thrive amain.

To dry up milk in Cattle you want to feed.

TAKE an ounce of powdered allum, boil it in two quarts of milk till it turns to whey, then take a large handful of sage, and boil it in the whey till you reduce it to one quart; rub her udder with a little of it, and give her the rest by way of drink: ~~milk~~ milk her clean before you give it her, and as you see need requires, repeat it. Draw a little milk from her eve-

ry second or third day, least her udder
be overcharged.

*To prevent the Black-legg, or Black-quarter in
Calves or Lambs.*

THIS distemper may be prevented, but
cannot be cured when it once seizes
the creature: the best lamb and calves are
most generally subject to it; it is occasion-
ed by an over-rankness of blood, that is,
the whole body is overloaded with blood,
so that the veins cannot discharge it quick
enough, therefore it breaks or bursts out
of the smaller blood-vessels, and disperses
through the flesh, then being out of its
latitude, it immediately cools, corrupts,
and becomes as so much dead matter,
which corrupts or rots all the flesh near
it, and having no vent to discharge itself,
it is rendered incurable, therefore death
quickly ensues.

Every breeder knows the time of year
he generally loses his calves or lambs by
this distemper, therefore it is the easier for
him to guard against it; we see by the

nature of the thing, that we have nothing to keep in subjection, but the blood, if we can keep it within its natural, course then it will preserve the animal.

If the blood can be kept thin, so as to play freely through the veins and arteries, it is not a farthing matter how much there is in the body, but it is when it turns thick and flow in its motion that clogs or stops up the avenues; therefore to prevent such eruptions, he must take care either to unload the veins by often bleeding, or keep the blood thin by exercise and medicine; either will do, but both are surest; and as it is not either expensive or very troublesome, there is no excuse for not keeping the cattle alive.

Before the time this malady generally comes on, be prepared with a quantity of rue in proportion to the stock of calves or lambs you have to take it.

In the first of May or thereabouts make two quarts of very strong rue-tea for every calf you have, and to every two quarts of tea, put two quarts of salt; bottle it up.

for use: drive up your calves every Monday morning, or once a week, and give each calf half a pint, and blood them in the neck vein once every fortnight; give your lambs each half the quantity every week, and cut a little bit of the tail every fortnight; by this precaution, you in all probability, will neither lose lamb or calf: though I call them lambs or calves, they are generally a year old before they take this disorder.

To kill lice or maggots in Sheep, and cure the Scab.

IN every two quarts of water, boil a quarter of a pound of tobacco, in this dissolve half an ounce of corrosive sublimate, add a gill of the spirit of turpentine, and a gill of train oil; bottle it up for use.

To kill Warbles.

PRICK them with a pin, and rub them with the spirit of turpentine: salt and

water will do sometimes if they be ripe, but the former is more effectual.

A sure method to prevent Sheep from the Rot.

IN the season when herbs are in their prime, take an equal quantity of rue and worm-wood, make them into a strong tea; into every quart of tea put two quarts of salt, and one ounce of the balsam of sulphur; keep it bottled up for use, and give each sheep two large table-spoonfuls for a dose, three times, or, at least twice a week all summer; a spoonful of dry salt three times a week is another preventive, but the former is more to be depended upon. I have tried it more than once, and I know a gentleman that saved all his flock by it, when others on the same common mostly died.

To prevent the flie from disturbing Sheep when new shorn, create the growth in wool, prevent maggots or lice from breeding, and prevent sickness, pelt-rot, or scab, &c. &c. and from whence these disorders proceed.

THERE is nothing more plain than that all these disorders are occasioned either by neglect or mismanagement; and I am confident that if the following receipt be kept up to, (which is both cheap and easily executed) not one sheep in a hundred would die, or even fall into any of the above disorders; this I know to be fact, both by reason and repeated trials.

What affects or disorders the animal spirits in one form of body, will in another: what will affect the human species, will a brute beast in either a greater or less degree. If we consider the nature or situation of a sheep in the shearing season, it will easily digest this argument to us. It is also very evident that most disorders which affect the animal spirits, come

on at first by cold, that such colds are most liable to seize the body when it is in the greatest heat, for then the skin (which is intended by nature as a defence against colds from entering into the fluids and open fleshy parts) is in time of any great heat, extended or stretched beyond its natural or usual bounds, by the swelling of the flesh, and all other inflamed parts within; therefore this surface or skin, as well as all other parts of the body, is as open and porous as a sponge, which admits the external air; and in this, as well as in all others, the greater the heat, the greater the attraction; and this air being admitted, and mixed with the inflamed frothy fluids, as soon as the motion of the body abates, so does that of the fluids, whereupon the froth settles, the parts shrink, the skin closes to its usual state, and within confines the attracted air, which being mixed with the blood or fluid matter, cools, thickens, and stops the usual currency, so consequently disorders the whole machinery till it is digested:

and though in some cases when it is only slightly affected, it may work off imperceptibly, perhaps externally by a boil, warble, or some small breaking out; or internally by gripes, or purging; but if the fluids be more heavily loaded or disordered, then it must have so much the more forceable remedy to eradicate it; for it is impossible for any living body to be in health or good frame, as long as any dead or inactive matter lodges within, contrary to its nature.

And what I have said, together with other concurring circumstances, may prove that all or most colds are taken up thro' the skin alone, and not through any open passages for taking in or discharging out any substance of nourishment.

If we be used to lie in a night-cap every night, but suddenly cast it off, do not we catch cold in our head? the like may be said of casting a neck-cloth, we take a fore throat: if a coat or waist-coat, we feel the effects of it in our bones (as is commonly expressed:) if we be in a great heat,

and run immediately to bathe in a cold bath, would it not greatly endanger our lives? I believe a little accident that once befel me, has since saved me many sheep, or at least disorders in them.

When a young man, I was remarkably active as to running, leaping, and all such like exercise; being at a sheep-washing one very hot day, a trifling wager arose, that I could not catch a sheep by fair running; in short I run to such a degree, that I raised myself into a great heat; the sheep were also panting for air under their heavy fleeces: near hand were some women washing. I began to play with the girls, and perhaps handled them a little undelicately; one of them presented me with a dish of cold water, which hit me on the back; and being in my shirt, it immediately wet my skin; instantly, almost as if I had been shot, a pain arose as far as the water spread over my back, so that I could scarce stir: I put on a dry shirt, and went to bed, but still the pain continued, as if my back was broke. As it was

natural for me to philosophize upon any uncommon event, my thoughts turned upon this.

It was quite clear to me, that my pain arose from the cold water; that it took this sudden effect, because I was hot; that if I had happened to bathe in that heat, in all likelihood it would have endangered my life: my next thoughts turned upon the sheep, that it might perhaps damage them to be put into the water in their present heat; as soon as this occurred, I immediately ordered to stop washing: they had then near half done; I ordered notes to be taken of as many as were washed, and the consequence was, that a great many of these died of the pelt-rot, or one disorder or other, and the revivers were mostly broken-coated; their wool came off like that of rotten sheep.

I still continued in great pain, and could scarce turn myself in the bed: a doctor was sent for, he bled and gave me several things inwardly, but all availed nothing, the pain still continued, and I was

very restless under it; upon several casts about in my mind, I was at last resolved to be my own doctor, and if possible, to drive it out the way it came in: upon this I ordered a pound of treacle to be made into whey, as strong as could be made; while this was doing, I with great difficulty got up, put on my great coat, drunk a glass of rum, and walked out; I went into a meadow-field, at the back of the garden, where there was a thick hedge, where I thought no one could see me, I there betook myself to running, and so continued, till I raised myself into a breathing sweat. I thought if any one had seen me, they certainly would think I was mad; therefore came in as demurely as if nothing had happened; I stripped myself, went to bed, drank my treacle-whey, and sweat very feverely; in the time of my sweating, I ordered a warming pan of hot coals to be held at my back at the outside of the bed-cloaths; all proceedings operated so well, that by the time the sweat was over, the pain in a manner left me,

nothing remained but a forenefs in my back. In fhort, I have cured myfelf fince of fitches and pains feveral times by much the fame method.

I would not give a rufh for any doctor, whether he be for the human or brute creation, that could not reafon well, and fhew where the grievance lay, and what brought it on: it is only fuch knowledge which can open his ideas to point out a cure: if he be ignorant in this, I fhould fufpect him of not being over-burdened with fterling fenfe, and every thing he did was hap at a venture, therefore no more than an equal chance whether it hit or miffed.

I hope my reader will excufe me for comparing a human creature to a brute; but I only do it fo far as relates to the machinery of the body (the foul has nothing to do with flefh and blood) and this in the two creations, are nearly alike. I am certain what will diforder one, will affect the other in fome degree, according to the ftrength and constitution; and I am

equally clear, that what will cure a man, will cure a horse, if their disorder spring from the same cause, and due care be had as to the proportion; neither is the distinction of the proportion applicable only to the two names of brute and human species, but partly to the size of the two bodies; for if the body be large, the veins, arteries, blood-vessels, &c. &c. require a dose in proportion, to circulate there-thro' in order of an equal discharge: a big man will require more than a small one, and so will a large horse than a galloway.

I am perfectly sure that a man requires more sterling wit to be a good doctor for a brute than for the human species, because we can tell where our ailment lies, how it affects us, and how we came by it. These are questions generally first asked, and, being resolved, are great helps to the doctor; but a dumb creature can only make signs at best in an imperfect manner, therefore it requires great penetration of judgment to find out the cause or complaint; indeed the beast's keeper may some-

times help out, by telling what hardships or mischances the creatures meet with; yet these are all short of speech from the afflicted, which shews plainly that a doctor for the brute-creation ought to be a man of real sense as well as learning, and also to understand a good deal of natural philosophy.

Upon looking back, I find this sort of a lecture has swelled my discourse larger than I at first expected, but it will not be amiss, perhaps, for my reader to bear it in mind for other sorts of cattle as well as sheep, since all sound reasons hang by one string.

The month of June is the most proper for shearing sheep; and in this month the weather is generally very hot; the sheep also are loaded with a very heavy coat; reason will tell us, that if they were to run in winter, it would not heat them so much as to walk now; nay, in short, if they were to run with it off in a hot day, it would not heat them so much as to walk with it on in the same day.

It is principally owing to washing and shearing that so many maladies in sheep arise, particularly those of pelt-rot, scab, hide-bound, and surfeites, or broken coats, &c. &c.

And the reason is plain and natural, for let a man be ever so careful in driving them to the fold, they must be heated when put into the fold; for by standing so close together, they will heat one another; and again by running among them to catch them adds still to the evil; then, in this heat, they are put into the coldest of water, because it is generally running water; popping them into it in such a situation, is almost as reverse to their nature, as for a fish to be out of water. For they are invironed by the thinnest skin almost of any other animal, so certainly must be the most liable to suffer in their constitution, as appears by the aforesaid reasons. And now, being washed, they are exposed in another extreme; for if their coats were thin, short, and open, like that of a dog, or a horse, it might soon dry; but, in-

stead of that, they stand during the night with a thick, heavy, wet, coat of wool about them; which may be compared to a man lying in wet sheets, which has cost many an one their lives. It may be answered, that sheep are often wet by rain; so I grant; but very seldom to the skin. For wool is of such a nature, that it shuts off rain surprizingly. I have examined a sheep in a very rainy day, but I never yet saw the wool wet to the bottom, if it was of any length, and if it was not, it would not affect them so much, because the fluids of the body are in a temperate heat; add to this, they are generally in motion by walking to feed, and the rain comes on gradually. All these considerations shew, that washing sheep is attended with two extremes of heat and cold, that they follow closely one upon another, while the fat or fluids are in a manner melted, therefore must certainly hurt their constitution or frame of body in one degree or other.

In a few days after this, they go thro' another sudden change, which is that of losing their coats; they are again heated by driving, standing close together, catching, &c. And now they are stripped naked to stand in buff all the night following; which is just the same as if a man were to strip off his usual apparel, and go naked; nay, it is rather worse, because he can change an uneasy hot situation by loosing his buttons, or some times thinning his cloaths, by degrees, as the weather grows hotter; but the warm fleece grows insensibly upon the sheep, and they never change it but once in a year, and that suddenly, or all at once.

I have several times known sheep die the next night or two after they were shorn; even last shearing-time we had it in the news-papers, of a farmer in England who had a good many fat weathers that died the night after shearing, because it happened to be colder than common. And will not reason tell us, that though

the whole flock did not die, yet, as some did, it shews that the strongest in constitution must suffer in some degree or other, though insensibly to our sight.

Now, all the above considerations being added together, prove, even to the weakest understanding, the ill consequences attending these two operations of washing and clipping, and I have often wondered how it was possible that so essential a point (to the health of this useful creature) should escape the pen of so many authors as have wrote upon this fine, profitable, innocent animal. As I am clear from experience (and if I had none, plain reason must shew) that there is not so fatal a disorder belonging to a sheep (not excepted) as arises from the consequences as above. And yet I have before me a work containing four or five hundred pages, which treats of nothing but sheep, and sheep-dogs; I know the author to be a sensible man, only that he is too long-winded, for he might have said as much to the purpose in twenty pages as the

whole contains. The fewest words that a man can express himself in, so as to be understood, the greater is the value of his works, so far as relates to physic or husbandry. As to history or novels they are quite another thing, for the value of them (in a great measure) is set according to their great bulk.

Though we see that the two operations of washing and shearing are so dangerous in the present practice thereof, yet it is a work that is absolutely necessary to be done: I shall therefore point out methods how they may be performed with little or no damage to the sheep: and be assured, my reader, that it is much better and safer to prevent a hundred sheep from falling into a disorder, than to cure one already in it, and the ingredients will not cost above a penny a large sheep, and a halfpenny a lamb: then as the phrase is, who would lose his hog for a halfpenny-worth of tar; besides, the expence and trouble are as nothing in comparison to the great benefit the wool receives therefrom.

The receipt to make wool grow.

TO every four quarts of new butter-milk, put one quart of train-oil, one quart of tar, and one of strong tobacco-water, wherein all the strength of half a pound of tobacco-dust has been extracted by boiling: mix the liquid altogether, then dissolve four quarts of salt: rub the sheep all over as soon as shorn; this will be sufficient for twenty sheep.

A cordial for sheep before washing or shearing.

TO every quart of ale put one quart of Barbadoes tar, and one quart of salt: give each sheep the eight part of a quart when it is going into the washing pool, and the like dose when it is shorn at the time you are rubbing it. These medicines will effectually prevent any of the aforesaid disorders, add growth to the wool, and kill lice, &c.

To make wool grow, preserve the lamb from the fox, &c.

WHEN your lamb is dropped, as soon as it is dry, rub it all over with the butter-milk, tar, train oil and salt, prepared as directed for grown sheep, but omit the tobacco-water; this will make its wool grow, prevent lice from breeding, and keep it warm. After this, if you be afraid of the fox, put a streak of tar over its loins, shoulders, and round its neck, and a fox will not touch it.

To make Ewes take the Ram.

IF you want early lambs to feed for the butcher, and to feed the ewes in summer, your way is to chase the ewes about the field to raise them in a heat, then give each ewe a table-spoonful of brandy; after this, turn the rams to them and they will take them.

To cure any sort of wound in a Sheep.

MIX together an equal quantity of tar, turpentine and fresh-butter, apply it plaister-wise, and it will not fail, but cure any sore.

To know a Sheep's age.

TILL a sheep is a year old it is called a lamb, in the second year it has two broad teeth before, in the third year four, in the fourth year six, and in the fifth year eight. Thus far we are led on by certainty, but after this it is only guess-work; if the teeth be long yellow, and broken, it is a sign of great age.

C H A P. XXXVIII.

A Scheme to maintain the Poor well, make them more useful to the public, and at the same time lower the poor-cess.

THE poor in country towns, are mostly maintained by land-holders, therefore it is necessary that the heads of every parish should take them immediately under their care and direction, provide for them comfortably; and likewise scheme so as to make them useful members of society, by earning their own living; the laws of England enforce the first, and warrant the last.

The first step that should be taken to forward this useful work, is for the minister of the parish to call a vestry to examine how many poor they have in the parish, that they may proceed accordingly, to provide houses and land in the following proportion, viz.

For every eighteen persons or so in pro-

portion, thirteen acres and a half, and a house in some by place in a town that will come at a low rent.

If thirteen acres and a half of land be rented in a farming way at 15 s. an acre, it will by dividing properly, produce the following stock and crop, viz.

Four acres and a half to graze three milk-cows, three for corn, three for flax, and three for hay and potatoes; by reducing the three acres of flax into yarn, it will be found to pay every expence attending the eighteen in family, as may appear by comparing the two following tables.

Table of expence for the above eighteen in a family.

	l.	s.	d.
To rent for thirteen acres and a half of land at 15 s. per	10	2	6
To house-rent - - -	5	0	0
To three cows for milk -	15	0	0
To the carcass of three fat cows, hides and tallow being sold	12	0	0
To 4 fat hogs at 1 l. 10 s. each	5	10	0
To cloaths for eighteen persons	36	0	0
To flax-feed to sow the 3 acres of land - - -	2	8	0
To plowing and sowing the corn and flax-land, being 6 acres at 10 s. per -	3	0	0
To seed oats - - -	0	12	0
To seed potatoes - - -	0	12	0
To a man and his wife as master and mistress of the family, their wages -	15	0	0
To soap and candles -	3	0	0
To household-furniture	20	0	0
	£	128	4 6

A table shewing the produce of three acres of flax when spun into yarn, the seed saved, &c.

To 40 bushels of flax-seed at l. s. d.
8s. per bushel - - - 16 0 0

To 120 stone of scutched flax,
and hackled to 9d. a pound
tare, when spun to three
dozen yarn, is worth 1s.
6d. per pound, - - - 81 0 0

After allowing for waste, there
will be 660 pounds of tow
when spun into yarn (which
may be done by children) it
will be worth 8d. per pound. 22 0 0

To 3 dry cows sold each year
when the milk-cows are
bought in - - - 10 10 0

To three fat calves sold at a
fortnight old. - - - 1 10 0

Total produce 131 0 0

Expences subtracted leaves a
profit to the parish of 2 15 6

Note the 20l. for furniture
would be mostly saved after
the first year.

C H A P. XXXIX.

Observations on the foregoing tables.

WE see by the foregoing tables the value of economy, for instead of sinking 13 l. every 18 people will clear 2 l. 15 s 6 d and it cannot be denied, but I have allowed them to live well, as three acres of corn and one acre and a half of potatoes will be sufficient for bread: I have stated it as a crop of oats; but if the land be good, it might bring wheat or rye, and as I state the land at fifteen shillings an acre, it is supposed to be of the best sort.

Before we can make a calculation with any degree of certainty or regulation, it is necessary to begin with some given quantity, therefore I have stated eighteen poor in every middle-sized parish, but suppose there were an hundred, it appears by the above table, and with the above economy, the parish would be no losers.

I have also made an observation in my

travels through England and Ireland, that each poor working family, upon an average, consists of six persons, perhaps a man and his wife, and three children, with an aged father or mother.

I have likewise made observations that if a man of such a family, have five or six acres of ground to occupy, he brings up his family, and maintains them out of it, though his children be of no use, but rather a burden to him, till they be thirteen or fourteen years old that they go to service. Then certainly if so much land be able to maintain such a family, and the children brought up in idleness, the advantage must be greater when three or four families are united into one, and the children made to work from six or seven years of age, and as the work of spinning is light and easy, it cannot hurt them.

I have myself employed children in spinning of seven or eight years of age in Ireland, who have earned two pence every day; and a great part of the yarn that

makes the cloth in the north of Ireland, is spun by children under thirteen or fourteen years of age: and it is a notorious truth, that the poor-cess is lowest in every manufacturing country, because the children are employed by tradesmen in one branch or other; if in such places they were to copy after the above plan, they would reduce it to nothing, because then they would raise their materials and victuals upon the first and cheapest terms, which in such places, are always high, owing to the populousness of every manufacturing country.

The next thing I am to clear up is, how the flax is to be got spun, and make the profit as appears in the table. As I know some of my readers before their ideas are opened, think it high, but all this is very easily made appear; for every man that understands flax will allow, that a tolerable good acre of land will produce forty stone of flax and thirteen or fourteen bushels of seed, and sometimes much more: also every hackler will allow, that

one stone of tolerable good flax, will produce nine pounds of tare, worth 9d. a pound, and the tow worth 4d. a pound: and every weaver will allow, that in the worst of times, yarn from flax or tow is worth as much spinning as they will sell it for before spun; therefore nine-penny flax when spun, will be worth eighteen pence, and four-penny tow will be worth eight pence, which is my charge in the above tables.

The next consideration is, how many of the supposed eighteen people may be able to till the ground, dress the flax, and spin it into yarn, &c.

I take upon me to say, that there is not one person in a hundred above seven years old, but what is able to work at some part of the branch or other: but to come nearer the thing, I shall suppose one blind in every eighteen, one lame or too old to work in every eighteen, and two children under working age in every eighteen; these make four, which we have no dependance on, therefore the working

people are reduced to fourteen. It is well known that an able man could break and scutch the 120 stone of flax in 120 days, which is far short of half the year: but such as are maintained by the parish are not expected to be able workmen: I shall allow two men to do less than the work of one, therefore suppose two men be all the year dressing the flax, threshing the corn, and setting the potatoes &c. which would not take the work of one man nine months. After this, there are twelve which must be applied to spinning flax and tow, according to their age and abilities.

It is well known that a middling spinner will spin from four to five pounds of nine-penny flax in a week, or six or seven pounds or more of four-penny tow in a week; but suppose eight of these people only spin 21 pounds of flax in a week, which is little above one pound and a half a piece, it will work up the quantity I propose, which is 180 pounds weight; and suppose the other four only spin each

three pounds of tow in a week, it will also work up the quantity I propose in the above table: if there should happen to be more men than women, which is seldom the case, they might be suited with other easy works, which would turn out equally in profit, and part of the flax might be fold unspun.

I was church-warden in a certain parish, where I propagated this custom, which had all the effect that I propose in this table.

Each parish in every city ought to take a farm in proportion of their poor, at some distance, where land would come cheap, in order that the poor might raise provisions and materials upon the cheapest terms; by sending the poor thus into the country, it would both add health to themselves and to the city, and keep a good many vagrants at a distance, who are very often instigators of mobs, tumults, and pilferings; there could be no harm in sending such to the work-house, and make them earn their living, since they would be

tenderly taken care of, and as there are two overseers to each parish, it would be no hardship for them to take turn about, and to go one each week for the year, being to see if the master and mistress kept proper regulation in their poor family.

T H E E N D.



DIRECTIONS to the BOOK BINDERS for placing the plates, are at the latter end of the Contents in the first and second volumes.

